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North Carolina, South Carolina and Virginia

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We are omitting this week the serial "Big Tremaine" and all our regular features in order to make room for the important reference matter.

SAVE THIS ISSUE

Keep It in Your Desk or Bureau Drawer

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WOOD'S SEEDS

THESE SEEDS for field and garden, grown from selected stock, tested for germination and purity, produce better crops than ordinary seed.

For seed, like livestock, must be bred. Some strains will produce 10 to 25 per cent more than other strains of the same variety.

We are constantly selecting seeds from the best producing plants in America and breeding them at our famous Williamson Seed Farm.

We have secured the finest strains of each variety of garden seed—the sweetest sugar corns—the crispest cucumbers the meatiest tomatoes—the earliest and tenderest peas — the sweetest watermelons and cantaloupes.

But good strains alone don't make good seed. The trashy, light weight, immature seed must be taken out. So our seeds are carefully recleaned. Nothing but good heavy seeds remain—each capable of growing good, healthy plants.

NEW CATALOG

Our 1921 Catalog of Woods Seeds now ready to mail, is really a text book of farm and garden information.

Write for Your Copy Today.

Wood's Crop Special

Free Subscription to *Wood's Crop Special* (monthly) giving current seed prices and timely information on field and garden. Post-card request is all that is necessary.

WOOD'S PLANTING CHART

Variety	When to Plant	Quantity for 100 feet	Quantity For an Acre	Distance Between Rows.	Distance Apart in Row.	Depth to Plant	Pounds to the Bushel
ALFALFA	Mar., April-Aug., Sept.	Broadcast	20 to 30 lbs.	Broadcast	Broadcast	¾ to 1 inch.	60 lbs.
ASPARAGUS ROOTS	Spring and Fall.	50 to 65 roots	5,000 to 7,000.	4 to 6 feet.	18 to 24 ins.	4 inches.	.....
BEANS, DWARF SNAP.	April to Sept.	1½ lbs.	100 lbs.	2 to 3 feet.	3 inches.	2 inches.	60 lbs.
" POLE	May and June.	1 lb.	30 lbs.	4 feet.	3 to 4 feet.	2 inches.	60 lbs.
" DWARF LIMA	May, June, July	1 to 1½ lbs.	30 to 60 lbs.	3 feet.	15 to 18 ins.	1½ inches.	56 to 60 lbs
" NAVY	June and July.	1 lb.	15 lbs.	3 feet.	1 foot.	2 inches.	60 lbs.
" SOY or SOJA	April, May, June.	1 lb.	15 lbs.	2½ to 3 feet.	6 inches.	1 to 3 ins.	60 lbs.
" VELVET	May and June	Broadcast or in corn	.....	.....	.....	2 inches.	60 lbs.
BEET, GARDEN	March to August	2 ozs.	6 to 8 lbs.	15 to 18 ins.	4 inches.	1 inch.	.....
" STOCK	April, May, June.	2 ozs.	6 to 8 lbs.	2 to 2½ feet.	8 inches.	1 inch.	.....
BROOM CORN	May and June.	2 ozs.	6 lbs.	3½ feet.	4 to 5 ins.	1 inch.	48 lbs.
BRUSSELS SPROUTS	May, June, July	1 oz.	¼ lb.	2½ to 3 feet.	18 inches.	½ inch.	.....
CABBAGE, EARLY	Jan. to Mar., Sept.	1 oz.	6 ozs.	2½ to 3 feet.	18 inches.	½ inch.	.....
" LATE	April to July	1 oz.	6 ozs.	3 feet.	2 feet.	½ inch.	.....
CARROT	March to August	1 oz.	3 to 4 lbs.	12 to 24 ins.	3 to 4 ins.	½ inch.	.....
CELERY	Feb., Mar., and April	⅛ oz.	3 lbs.	2 to 4 feet.	6 to 8 ins.	⅛ inch.	.....
CHUFAS	April to July.	1 lb.	1 to 1½ Pks.	2½ to 3 feet.	15 to 18 ins.	2 inches.	40 lbs.
CLOVER, BURR	July to November	Broadcast	20 to 25 lbs.	Broadcast	Broadcast	½ inch.	.....
" CRIMSON	July to October.	Broadcast	15 lbs.	Broadcast	Broadcast	½ inch.	60 lbs.
" JAPAN	March and April.	Broadcast	10 to 15 lbs.	Broadcast	Broadcast	¼ inch.	25 lbs.
" SWEET	April, May—Aug. to Nov.	Broadcast	20 lbs.	Broadcast	Broadcast	¾ inch	.....
" OTHER KINDS	Feb., Mar.—Aug. to Nov.	Broadcast	10 to 12 lbs.	Broadcast	Broadcast	½ inch.	60 lbs.
COLLARDS	March to August	1 oz.	¼ lb.	2½ to 3 feet.	2 feet.	½ inch.	.....
CORN, GARDEN	April to July.	Lb., 100 hills	10 to 12 lbs.	3 feet.	12 to 18 ins.	1 to 2 ins.	.....
" FIELD	April to July.	Lb., 100 hills	10 to 12 lbs.	3½ to 4 feet.	12 to 18 ins.	2 ins.	56 lbs.
CUCUMBER	April to July.	Oz., 50 hills.	2 lbs.	4 feet.	4 feet.	1 inch.	.....
EGG PLANT	Feb., Mar., April.	¼ oz.	6 ozs.	3 feet.	3 feet.	¾ inch.	.....
ENDIVE	August.	⅛ oz.	1 lb.	18 inches.	1 foot.	¾ inch.	.....
KALE, SPRING	Feb. to Apr., Aug. to Oct.	Broadcast	8 lbs.	Broadcast	Broadcast	½ inch.	.....
" WINTER	Feb., Mar., Aug. to Oct.	1 oz.	4 to 5 lbs.	18 inches.	6 inches.	½ inch.	.....
KOHL RABI	March to July.	1 oz.	1 lb.	18 inches.	5 to 6 inches	½ inch.	.....
LETTUCE	Feb. to May, July to Oct.	1 oz.	2 lbs.	8 to 12 ins.	18 inches.	¾ inch.	.....
LEEK	Feb., Mar., Sept.	1 oz.	5 to 6 lbs.	12 to 18 ins.	4 to 6 ins.	½ inch.	.....
MUSTARD	Feb.,Mar.,Apr.,Sept.,Oct.	1 oz.	5 to 6 lbs.	6 to 12 ins.	3 to 4 ins.	½ inch.	.....
MELON, MUSK, or CANTALOUPE	May and June.	Oz., 50 hills.	2 lbs.	4 to 6 feet.	4 to 6 feet.	¾ to 1 inch.	.....
MELON, WATER	May and June.	Oz., 30 hills.	3 lbs.	8 to 10 feet.	8 to 10 feet.	1 inch.	.....
MILLET, GOLDEN	May, June, July.	Broadcast	1 bus.	Broadcast	Broadcast.	½ inch.	50 lbs.
OATS	Feb.,to Apr., Sept., Oct.	.....	2 to 3 bus.	.....	.....	1 to 2 ins.	32 lbs.
OKRA	April, May, June.	3 ozs.	8 to 10 lbs.	3 feet.	1 foot.	1 inch.	.....
ONION	Jan., Feb.—Aug., Sept.	1 oz.	5 to 6 lbs.	12 to 18 ins.	3 to 4 ins.	½ inch.	.....
PARSLEY	Feb., Mar.—Sept., Oct.	1 oz.	4 to 5 lbs.	12 to 18 ins.	2 to 3 ins.	½ inch.	.....
PASNIP	March to June 15th.	¼ oz.	5 lbs.	18 inches.	4 to 6 ins.	¾ to ½ inch.	.....
PEANUTS	May and June.	1 lb.	35 to 40 lbs.	2½ to 3 feet	8 to 10 ins.	1 to 2 ins.	22 lbs.
PEAS, GARDEN	Feb. to May.	2 lbs.	90 lbs.	2½ to 3 feet	3 to 4 ins.	2 to 3 ins.	56 to 60 lbs
" COW	May, June, July.	Broadcast	1 to 1½ bus.	Broadcast	Broadcast.	2 inches.	60 lbs.
" CANADA FIELD.	Jan., Feb.—Oct. to Dec.	Broadcast	1½ bus.	Broadcast	Broadcast.	4 inches.	60 lbs.
PEPPER	Feb. to July.	Oz., 1000 plts	½ to ¾ lb.	18 inches.	2 to 3 feet.	¾ inch.	.....
POTATOES, EARLY	March, April.	¼ peck	10 to 12 bus.	3 feet.	15 inches.	4 inches.	60 lbs.
POTATOES, LATE	June, July.	¼ peck	10 to 12 bus.	3 feet.	15 inches.	4 inches.	60 lbs.
PUMPKIN	May and June.	Oz., 20 hills.	3 lbs.	8 to 10 feet.	8 to 10 feet.	1 inch.	.....
RADISH	Feb. to May, Aug. & Sept.	¼ lb.	3 to 4 lbs.	18 to 24 ins.	4 to 6 ins.	½ inch.	.....
RAPE	Feb.toApr.15,Aug.toNov.	2 ozs.	8 to 10 lbs.	1 to 1½ feet.	4 to 6 ins.	½ inch.	.....
RHUBARB	March and April.	1 oz.	8 to 10 lbs.	Trans. 6 feet.	Trans. 3 feet	½ inch.	.....
RYE	July to November.	Broadcast	1½ bus.	Broadcast	Broadcast.	2 inches.	56 lbs.
SALSIFY	March to July.	2 ozs.	6 to 8 lbs.	18 inches.	4 to 6 ins.	½ inch.	.....
SORGHUM	May and June.	4 ozs.	5 to 6 lbs.	3½ to 4 feet.	4 to 6 ins.	½ to 1 inch.	48 lbs.
SPINACH	Feb. to Apr., Aug. to Dec.	1 oz.	12 to 15 lbs.	1½ to 2 feet	4 to 6 ins.	1 inch.	.....
SQUASH	April to July.	2 ozs. (hills)	3 to 4 lbs.	3 to 4 feet.	3 to 4 feet.	1 inch.	.....
TEOSINTE	May and June.	1 oz.	2 to 3 lbs.	3½ to 4 feet	4 to 6 ins.	1 inch.	.....
TOBACCO	February.	.....	1 to 2 ozs.	3½ to 4 feet	3 feet.	1-16 inch.	.....
TOMATO	January to July.	1 oz., 1500 plts	4 ozs.	4 feet.	3 feet.	¼ inch.	.....
TURNIP	Feb., July to Sept. 15.	1 oz.	1½ to 2 lbs.	2 feet.	4 inches.	½ inch.	.....
VETCH	Feb., Mar.—July to Nov.	Broadcast	20 lbs.	Broadcast	Broadcast.	2 inches	.....
WHEAT	October and November.	Broadcast	5 pecks.	Broadcast	Broadcast.	2 inches	60 lbs.

T. W. WOOD & SONS, SEEDSMEN, RICHMOND, VA.

THE PROGRESSIVE FARMER

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THE FARM YEAR—1921

1921	Sunday	Monday	Tuesday	Wednes.	Thursd'y	Friday	Saturd'y
Jan.	...	...	...	...	...	...	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	...	...	...	...	...
Feb.	...	...	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	...	...	...	...	...
March	...	...	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	...	...
April	...	...	...	...	...	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
May	...	...	...	...	...	...	...
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	...	...	...	...
June	...	...	...	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	...	...

1921	Sunday	Monday	Tuesday	Wednes.	Thursd'y	Friday	Saturd'y
July	...	...	...	...	...	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	...	...	...	...	...	...
Aug.	...	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	...	...	...
Sept.	...	...	...	...	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	..
Oct.	...	...	...	...	...	...	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	...	...	...	...	...
Nov.	...	...	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	...	...	...
Dec.	...	...	...	...	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

What to Plant in the Garden Each Month

THE directions given in the planting guide below apply to the **Upper South** generally—that is to say, southern and eastern Virginia; Piedmont, middle, and eastern North Carolina; the upper halves of South Carolina, Georgia, Alabama, and Mississippi; and will apply generally to Arkansas and to middle and western Tennessee. For the **Lower South,** including the South Carolina coast, southern Georgia, Alabama, Mississippi, all of Louisiana, and most of Texas, planting may be begun two to four weeks earlier in the spring and continued two to four weeks later in the fall than shown in this table. For our **mountain region,** spring plantings should be delayed two to four weeks beyond the dates shown in this table while plantings in summer and fall for the late crops should be made two to four weeks earlier.

Please note the meaning of the following letters and figures as used after the name of any vegetable in this table:

(E) means it is a little early and a little risky for planting but advisable for those who want an early start.

(L) means it is rather late for planting but still advisable if a sufficient crop has not already been seeded.

(S) means that succession planting should be made at intervals of about two weeks.

"1" means plant only in **first** half of months indicated.

"2" means plant only in last half of month indicated.

JANUARY

Plant in Garden.—Garden peas—2 (E), onion sets—2 (E) Irish potatoes—2 (E), kale (E), spinach (E), mustard (E).

Plant in Hotbed for Maturity.—Beet, lettuce (S), pansies.

Plant in Hotbed for Later Transplanting.—Early cabbage—1, cauliflower—1, Brussels sprouts—1, beet—1, onion seed—1, early tomato—2.

Transplant to Garden.—Frost-proof cabbage plants, strawberry plants, blackberry plants, dewberry plants, raspberry plants, asparagus and rhubarb roots. Set all kinds of fruit trees.

FEBRUARY

Plant in Garden.—Beet—2 (E), cress—2 (E), lettuce—2 (E), mustard—2 (E), garden peas (S), onion sets, onion seed—2, Irish potato, radish—2 (S), rape—2, spinach—2, turnip—2, parsnips—2 (E), carrots—2 (E), kale—2 (E), Dwarf Essex rape—2 (E), spinach—2 (E).

Plant in Hotbed for Later Transplanting.—Late cabbage—1, egg plant—2, pepper, tomato, lettuce—1.

Transplant to Garden.—Early cabbage, cauliflower—1, Brussels sprouts—1, strawberry plants, beets, blackberry, dewberry, raspberry plants, asparagus, rhubarb roots; set all kinds of fruit trees.

MARCH

Plant in Garden.—French Globe artichoke, Jerusalem artichoke, asparagus roots, bush snap-bean—2 (E), beet, carrot, chive, sweet corn—2 (S), horseradish roots, kale, kohl-rabi (S), lettuce (S), onion sets, parsley, onion seed, parsnips, wrinkled garden peas (S), Irish potatoes, radish (S), rape, spinach—1, New Zealand spinach, turnip, salsify.

Plant in Hotbed for Later Transplanting.—Eggplant—1, pepper—1, martynia—1, sweet potato, tomato—1, celery, leek.

Transplant to Garden.—Early cabbage—1, late Cabbage—2, beet, onion plants, early tomato—2 (E), strawberry plants.

APRIL

Plant in Garden.—Bush snap bean (S), pole bean—2, chard, sweet corn (S), blackeye cowpeas—2 (S), cucumber, endive, kohl-rabi (S), musk melon, okra—2, garden peas (L), squash, parsnip, salsify, watermelon—2, water cress.

GREAT MEETINGS, LYNCHBURG, JANUARY 11; RALEIGH, JANUARY 12 AND 13; FLORENCE, JANUARY 14

MOST earnestly do we urge **every tobacco farmer in Virginia** to attend the mammoth state-wide tobacco growers' meeting to be held in Lynchburg, Tuesday, January 11.

Most earnestly do we urge **every tobacco farmer in North Carolina** to come to Raleigh, Wednesday, January 12, for an equally great state-wide North Carolina tobacco meeting here that date, and **every North Carolina cotton farmer** should be in Raleigh the next day, Thursday, January 13, for the state cotton growers' meeting.

Then on Friday, January 14, **all the tobacco farmers in South Carolina** are asked to attend their great state meeting in Florence.

These are no ordinary meetings. They are extraordinary. Now at last after long, long years of talk about coöperation, the officers of the tobacco association and the cotton association in these states and the combined agricultural leadership of Virginia and the Carolinas expect to present plans for genuinely revolutionary reforms in crop marketing. Aaron Sapiro, the famous California marketing expert, will speak at all four meetings, and it is hoped that ex-Secretary William G. McAdoo will appear on one or more occasions.

At last the real fight for commercial freedom for Carolina-Virginia farmers is definitely begun. Be sure to go to Lynchburg, Raleigh, or Florence, and take every neighbor who can raise the money for the trip. Let's show the world that we mean business.

Plant in Open Bed for Later Transplanting.—Celery, leek, tomato, pepper, egg plant, cabbage, collard seed, beet.

Transplant to Garden.—Egg plant—2, martynia—2, pepper—2, sweet potato—2, tomato.

MAY

Plant in Garden.—Bush snap beans (S), pole bean, bush lima bean, runing lima bean, beet, chard, corn (S), okra, blackeye cowpea (S), pumpkin, cushaw or winter squash, cantaloupe, watermelon, cucumber, cauliflower, radish, pumpkin.

Plant in Open Bed for Later Transplanting.—Brussels sprouts, cabbage, collard, tomato.

Transplant to Garden.—Egg plant, pepper, sweet potato, tomato.

JUNE

Plant in Garden.—Bush snap beans (S), pole bean, bush lima bean, running lima bean, witloof chicory, corn (S), muskmelon (L), okra, pumpkin, cushaw or winter squash, watermelon.

Plant in Open Bed for Later Transplanting.—Brussels sprouts, cabbage, cauliflower, collard, tomato.

Transplant to Garden.—Collard, leek, tomato, sweet potato, peppers, egg plant, Brussels sprouts.

JULY

Plant in Garden.—Bush snap bean (S), pole bean—1, bush lima bean—1, beet, witloof, chicory —1, carrot, corn, cucumber, lettuce —2 (S), pumpkin—1, cushaw or winter squash—1, Irish potato, rutabaga turnip—2, rape.

Transplant to Garden.—Brussels sprouts, cabbage, cauliflower, collard, celery—2, leek, tomato, sweet potato, lettuce, pepper, egg plant.

AUGUST

Plant in Garden.—Bush snap beans (S), beet, carrot—1, corn salad, kale, kohl-rabi (S), lettuce (S), garden peas (S), Irish potato—1, radish (S), spinach—2, turnip, rutabaga turnip, mustard, parsley, parsnips, Swiss chard.

Transplant to Garden.—Brussels sprouts, cabbage, cauliflower, celery—1, collard (L), tomato—1 (L), kohl-rabi.

SEPTEMBER

Plant in Garden.—Beet, corn, salad, cress, kale, lettuce (S), mustard, onion seed, onion sets, parsley, garden peas—1, rape, radish (S), winter radish, spinach, turnip, carrots, snap beans, endive, kale.

Plant in Open Bed for Later Transplanting.—Cabbage for frost-proof plants, lettuce to set in frames.

OCTOBER

Plant in Garden.—Kale (L), mustard, onion sets, onion seed—1 (L), rape, radish, spinach—1 (L), turnip for salad, pansies, sweet peas, parsley, parsnips, Swiss chard.

Plant in Open Bed for Later Transplanting.—Cabbage (L) for frost proof plants.

Plant in Cold Frame.—Lettuce transplanted from open bed, lettuce sowed for transplanting to hotbed, beet—1, sowed for transplanting to hotbed.

Transplant to Garden.—Strawberry plants.

NOVEMBER

Plant in Garden.—Garden peas for earliest spring use, mustard—1 (L), rape—1 (L), asparagus roots, horseradish roots, rhubarb roots, onion sets, onion seed.

Plant in Cold Frame.—Radish, lettuce.

Transplant to Garden.—Strawberry plants, blackberry, dewberry, raspberry plants. Set all kinds fruit trees.

DECEMBER

Plant in Garden.—Asparagus roots, horseradish roots, rhubarb roots.

Plant in Hotbed for Maturity.—Beet transplanted from cold frame, beet sowed, lettuce transplanted from cold frame, lettuce sowed (S), radish (S), pansies.

Plant in Hotbed for Later Transplanting.—Brussels sprouts—2, cabbage, cauliflower—2, onion seed—2.

Transplant to Garden.—Cabbage for earliest spring use, strawberry plants, lettuce plants; set all kinds fruit trees.

Farm Crops to Plant Each Month

THE following table is based on the climate of eastern North Carolina, upper South Carolina, north Georgia, north Alabama, north Mississippi, central Arkansas and southern Oklahoma. In western North Carolina and Virginia, of course, planting should begin slightly later in spring and close slightly earlier in the fall than this table indicates; while in lower South Carolina and middle and south Georgia, Alabama, Mississippi, Louisiana, and Texas, planting should begin earlier in the spring and close later in fall. When "(L)" is inserted after the name of a crop, it indicates that it is rather late to plant that crop, but under favorable conditions it may pay to plant it, if earlier planting has not been made.

FEBRUARY

Rust-proof oats, strawbrerry plants, grasses, and clover.

Last half February only:—Dwarf Essex rape, spring turnips, Irish potatoes.

MARCH

First half March only:—Dwarf Essex seeds, Burt or 90-day oats, spring turnips.

Last half March only:—Early corn, field corn, alfalfa, Japan clover. Bed sweet potatoes.

APRIL

Corn, Bermuda grass roots.

First half April only:—Cantaloupe. Bed potatoes.

Last half April only:—Cotton, early soy beans, melons.

MAY

Cotton, corn, peanuts, soy beans, velvet beans, Sudan grass, cornfield beans, melons, pumpkins. Set sweet potato plants.

Last half May only:—Sorghum, millet, cowpeas, peanuts.

JUNE

Millet, peanuts, corn, cowpeas, soy beans, velvet beans, Sudan grass, ensilage corn. Set sweet potato plants.

Last half June only:—Set cuttings sweet potato vines.

JULY

First half July only:—Sorghum, early-maturing corn (L), soy beans, German millet, Sudan grass, late Irish potatoes, cuttings of sweet potato vines.

Last half of July only:—Rutabagas, early turnips, second crop Irish potatoes.

AUGUST

Turnips, bur clover.

First half August only:—Second crop Irish potatoes, rutabagas.

Last half August only:—Virginia Winter oats.

SEPTEMBER

Rape, Virginia Winter oats, crimson clover, grass and clover seeds, rye for grazing, hairy or winter vetch, winter turnips.

First half September only:—Alfalfa, bur clover.

OCTOBER

Rye.

First half of October only:—Rust-proof oats, vetch, rape.

NOVEMBER

Rye as a cover crop for every bare acre.

First half November only:—Wheat, oats, (L).

Last half November:—Wheat (L).

DECEMBER

First half December only:—Rye (L).

T. B. PARKER.

A Spray Calendar for Orchard Fruits

	When to Spray	First Spraying	Second Spraying	Third Spraying	Fourth Spraying
APPLE PEAR AND QUINCE		During fall and winter, or before buds swell in spring.	Just as the last of the blossoms fall.	Three weeks after second spraying.	Three weeks after second spraying.
	To Control	San Jose Scale and other scale insects. Also Aphis. This spraying also destroys spores of many fungous diseases.	Coddling Moth, Scab. Leaf-eating insects.	Coddling Moth, Bitter Rot, Scab, Blotch.	Coddling Moth, Bitter Rot, Scab, Blotch.
	Spray to Use	Concentrated Lime-sulphur solution, 1 gallon to 7 to 9 gallons of water.	Bordeaux Mixture, 4-5-50 plus 2 lbs. arsenate of lead.	Bordeaux Mixture 4-5-50, plus 2 lbs. arsenate of lead.	Bordeaux Mixture 4-5-50, plus 2 lbs. arsenate of lead.
PEACH AND PLUM	When to Spray	During fall and winter or before buds swell in spring.	Just as the dried up blossoms or shucks are falling off the fruit.	Three weeks after second spraying.	Just before fruit begins to show signs of ripening.
	To Control	San Jose Scale and other scale insects. Also Aphis. Also kills many fungous disease.	Curculio, Aphis, Leaf Curl, Brown Rot, Scab.	Curculio, Leaf Curl, Brown Rot, Scab.	Brown Rot, Scab.
	Spray to Use	Concentrated Lime-sulphur solution, 1 gallon to 7 to 9 gallons of water.	Self-boiled Lime-sulphur plus 3 lbs. arsenate of lead.	Self-boiled Lime-sulphur plus 3 lbs. arsenate of lead.	Self-boiled Lime-sulphur.
GRAPES	When to Spray	Just before blooms come out.	Just after fruit sets.	2 weeks to 18 days later than second.	2 weeks to 18 days later than third.
	To Control	Berry Moth, Leaf Hopper, Anthracnose, Mildew, Black Rot.	Berry Moth, Leaf Hopper, Anthracnose, Mildew, Black Rot.	Berry Moth, Anthracnose, Mildew, Black Rot.	Berry Moth, Anthracnose, Mildew, Black Rot.
	Spray to Use	Bordeaux 3-4-50 plus 2 lbs. of arsenate of lead.	Same as first.	Same as first.	Same as first.

COMING AUCTION SALES

Aberdeen-Angus

Mississippi Aberdeen-Angus Breeders' at Jackson, Miss., April 4, 1921.

Alabama Aberdeen-Angus Breeders' Selma, April 5.

HOGS

Berkshires

Virginia Berkshire Breeders' Association, Roanoke, Va., January 11.

Poland-Chinas

Newton and Newton, New Albany, Miss., January 31.

J. W. Durham, Smoaks, S. C., February 15.

Schuler Bros., Vance, S. C., February 16.

J. F. Palmer, McCormick, S. C., February 17.

E. L. Brooks, Dyson, S. C., February 18.

J. D. Smith, Anderson, S. C., February 19.

Duroc-Jersey Sales.

Highland Oaks Farm, Pierce, Fla., January 3.

Willis and Ramsey, Evinston, Fla., January 4.

Peacock and Hodge, Cochran, Ga., January 6.

Richmond and McArthur, Ailey, Ga., January 7.

Berryton Duroc Farm, Berryton, Ga., January 8.

Jordan Bros., Raleigh, N. C., January 12, 1921.

Chestnut Hill Farm, Lynchburg, Va., January 29.

Hampshires.

Akin and Watson, Statesboro, Ga., January 4.

J. A. Franklin, Needville, Ga., January 5.

C. C. Brinson, Wrightsville, Ga., January 6.

J. B. Meadows and Porter Bros., Cochran, Ga., January 8.

Organizations That Aid the Farmer

Mutual Fire Insurance, Virginia and South Carolina

FOLLOWING is a list of the farmers' mutual fire insurance associations in Virginia and South Carolina, together with the names of the secretaries, who will gladly give needed information to any inquirer:

Virginia Companies

Albemarle Co.—J. W. Apperson, Crozet.
Bedford County—R. L. Ellicot, Bedford.
Campbell County—E. G. Peerman, Rustburg.
Craig Mutual—W. B. P. Lipes, New Castle.
Cross Keys—C. L. Hedrick, Cross Keys.
Dan River—O. B. S. Yeattes, Chatham.
East Augusta—N. L. Schreckhise, Mt. Sidney.
East Rockingham and Page—C. W. Louderbeck, Stanley.
Farmers' Mutual Benefit Association—S. P. Spain, Chester.
Smyth County—Jas. A. Groseclose, Marion.
Wythe County—W. B. Cassell, Wytheville.
Augusta County—A. H. Towberman, Staunton.
Washington County—D. O. Pettyjohn, Abington.
Fauquier—Wm. A. Cowne, Midland.
Grayson and Carroll Ins. Co.—R. C. Fulton, Independence.
Henrico—D. A. Fortna, Richmond.
Floyd Division—D. M. Dickerson, Floyd.
Isle of Wight Division—W. E. Howle, Rushmere.
Mecklenburg—C. M. Gordon, Baskerville.
Mutual Fire Ins. Associatiin—W. E. Hermance, Norfolk.
Bland County—T. D. Hubble, Bland.
Mutual Protective Association of Virginia, Inc.—J. W. Ikenberry, Daleville.
Nelson County Ins. Co.—J. O. Goodwin, Lovingston.
Patrick County Ins. Co. of Virginia, Inc.—A. A. Thomas, Vesta.
Pulaski and Giles Mutual Ins. Co.—A. H. Chumbley, Belspring.
Rappahannock Home Mutual Fire Ins. Co.—A. T. Botts, Woodville.
Rockingham Home Ins. Co.—Samuel Pence, North River.
Shenandoah—R. L. Campbell, Woodstock.
Virginia Protective Association—W. G. Spigle, Troutville.
West Rockingham—B. F. Berry, Mt. Clinton.

South Carolina Companies

Abbeville-Greenwood Association — J. R. Blake, Greenwood.
Anderson Association—J. J. Smith, Starr.
Marlboro County Association—C. F. Easterling, Bennettsville.
Chester County Association—Walter Simpson, Chester.
Darlington County Association — R. F. Howle, Darlington.
Cherokee County Association—W. D. Kirby, Gaffney.
Newberry County Association—L. I. Epting, Newberry.
Orangeburg County Association—J. H. Cloffey, Orangeburg.
Union County Association—John W. Gregory, Union.
Oconee County Association—J. D. Isbell, Walhalla.
Fairfield County Association—H. E. Kitchen, Winnsboro.
York and Lancaster Companies—J. L. Rainey, Pres., Sharon.
Florence County Association—D. E. Fraser, Bannockburn.

Eight Principles of "The California Marketing Plan"

THE following eight principles of co-operative marketing as worked out in California have been summarized by Mr. Aaron Sapiro, attorney for 14 of the California co-operative associations:

1. Co-operative marketing associations should include as members only growers or landlords who receive part of the crop as rent and thus have products to market. This is essential from both economic and legal principles.

2. Co-operative marketing associations must have a certainty of products to market. They must, therefore, have the growers of a commodity tied up strictly under a **long-term contract**, ranging from three to nine years. This gives an opportunity for proper marketing connections; development of expert personal handling of financial operations, and building of plants.

3. Co-operative marketing associations **must pool the proceeds** of the sale of products of similar grade and variety so that each member receives exactly the same as every other member for a similar quantity of products of like variety, grade, and quality.

4. Co-operative marketing associations must confine themselves to the **one function of marketing the products of their members** only. They must not attempt collateral lines, such as the purchase of supplies, etc.; nor must they market products for any persons except their own members. This is also essential from a legal standpoint.

5. Co-operative marketing associations must have **a large element of control** in the marketing unit of the particular commodity. This control may range anywhere from 30 to 75 per cent, depending upon the commodity and the general marketing conditions. If a commodity is marketed nationally, a local county marketing association is bound to fail. Such local associations cannot hope to affect the general market price nor to save themselves from being swamped by competing local associations or by the disorganized producers.

6. A co-operative marketing plan must concentrate the marketing and other problems through **expert specialists.** These experts must be sought wherever they can be found, to take charge of statistics, finance, organization, sales, warehousing, transportation, etc. When once the association is organized, it must be conducted from the standpoint of sheer efficiency.

7. The co-operative marketing association which deals with non-perishable products must make possible the use of **collective credit** so that the grower may receive a substantial amount on delivery of product, even though a great portion of the crop be stored for distribution throughout the marketing year.

8. The contracts between the association and the individual grower must be **standard, enforceable contracts.** All members must sign the same agreement on the same terms. The agreement itself must be ironclad and subject to enforcement by courts of the land.

Rules for Farmers' Coöperative Enterprises

1. THAT no shareholder should have more than one vote, regardless of the number of shares held. No proxy voting shall be allowed.

2. That shares shall be of low denomination, $10 being a common figure, and may be paid in small installments, if necessary.

3. That the association may have the prior right to purchase shares when the owner wishes to sell.

4. That all goods and produce shall be bought and sold on the cash system and at prevailing prices. Cutting prices is discouraged.

5. That before paying dividends a sufficient amount shall be allowed for the depreciation of stock, fixtures and buildings.

6. That a small surplus may be set aside for enlargement, or as a reserve for a less prosperous season.

7. That a small amount, say 2 per cent of net profits, may be set aside for educational purposes to promote a better understanding of the cardinal principles of coöperation, its ethical and economical benefits, etc.

8. That capital stock shall be paid its hire —a certain fixed and reasonable rate of interest.

9. That the remaining profits shall be divided among the members and customers in proportion to their patronage.

10. That one-half as much dividends shall be paid to non-members as to members on patronage.

11. That the door shall not be shut in the face of any worthy applicant for membership. Unless his character, occupation, or business relations are objectionable, he shall have the right to purchase one share of stock and become a member at will.

12. Except in rare cases, a new coöperative enterprise, whether store, creamery, warehouse, elevator, cannery or what not, should not be started in a community where enough such enterprises already exist to serve the people amply.

Livestock Associations in South Carolina

SOUTH Carolina Swine Growers' Association—President, F. J. Parham, Union; secretary, L. V. Starkey, Clemson College; treasurer, W. J. Sheely, Clemson College. Annual meeting to be held in Columbia, January 11, 12 in connection with Southern Swine Growers' Association.

South Carolina Dairymen's Association—President, R. M. Cooper, Jr., Wisacky; vice-president, J. L. McIntosh, Dovesville, secretary-treasurer, J. P. LeMaster, Clemson College. Annual meeting probably first week in March.

South Carolina Livestock Association—Acting president, C. B. Woolsey, Aiken; secretary-treasurer, W. J. Sheeley, Clemson College. Annual meeting in Columbia, probably February 1-3 with Southern Cattlemen's Association.

South Carolina Poland China Breeders' Association—President, F. J. Shuler, Vance; secretary, A. W. Copeland, Pendleton.

South Carolina Duroc Breeders' Association—President, F. J. Parham, Union; vice-president, J. I. Bradham, Manning; secretary-treasurer, C. L. Waddell, Georgetown.

McCormick Beef Breeders' Association—President, W. D. Morrah, Troy; secretary-treasurer, G. W. Cade, Willington.

Community Fairs in North Carolina

COMMUNITY fairs were held in North Carolina in 1920 in the following counties. Where the counties held more than one community fair, we are giving the number. Where no figures are given, only one community fair was held in that county. Where the name of the county appears in **bold face** or black-letter type, it means that the county held a **county fair** in addition to its community fairs.

Look over the list of counties and see whether your own county is doing its duty and measuring up to its opportunity in this important line of rural progress. The North Carolina State Department of Agriculture, Raleigh, will give any community $25 for a community fair, provided the people themselves raise $25 or more for premiums.

Following is the list of counties holding community fairs last year:

Alamance
Alexander, 3
Avery
Bertie
Beaufort, 2
Bladen
Buncombe, 7
Cabarrus, 4
Caswell
Catawba, 3
Chatham
Cleveland
Columbus, 3
Davidson
Durham
Forsyth, 3
Franklin, 3
Gaston
Granville, 3
Guilford, 3
Halifax
Harnet
Hertford, 2
Iredell, 3
Jackson, 7
Johnston, 5
Lee, 4
Lenoir, 2
Madison, 3
Martin, 3
Mecklenburg, 3
Mitchell, 2
Montgomery, 2
Nash
Orange, 4
Pasquotank
Pender, 2
Perquimans
Person, 4
Polk, 5
Robeson, 4
Rockingham, 4
Rowan, 2
Rutherford, 3
Sampson, 2
Stanly, 4
Stokes
Surry
Transylvannia, 7
Union
Vance, 2
Wake, 4
Washington, 2
Wayne, 4
Wilkes, 3
Yancey, 4

The following counties held county fairs, but no community fairs:

Chowan
Richmond
Yadkin
Graham
Swain
Moore
Warren
Randolph
Wilson

Corn Clubs, Canning Clubs, Etc.: Rules for Entering

HERE are some important facts about club work which ought to be familiar to all Southern boys and girls, parents and teachers:

Ages.—Any boy or girl who was **between 10 and 18** years of age on January 1, 1921, may join any club this year.

Kinds of Clubs.—There are various kinds of clubs, but the most popular are **Pig, Poultry, Corn, Peanut, Potato,** and **Cotton,** these being for both boys and girls; and **Canning** and **Home Economics** for girls only.

Requirements for Admission.—In order to join a Corn, Peanut, Cotton or Sweet Potato Club, the boy or girl must agree to cultivate **an acre** of the crop indicated and to make a report of the work done. In the Irish Potato Club and in Canning Clubs, only **one-eighth of an acre** need be cultivated.

In the Pig Club the boy or girl must have either (1) a grade hog for fattening, (2) a purebred for breeding purposes, or (3) a sow for the sow and litter project.

In the Poultry Club the boy or girl must agree to hatch one or more **settings of purebred eggs.**

Whom to Consult.—Your teacher should know about these clubs. If she doesn't, consult your county agent or write your state agricultural college or state club agent.

Local Clubs.—Any boy or girl meeting the requirements may enroll as a club member, even if not a single other neighborhood boy or girl is interested. In order to get the full benefits of club work, however, there should be **a local club of five or more members.** Expert supervision and advice and many helpful demonstrations can be given to local clubs which are not available to individual members working alone.

Each boy or girl wishing to join any particular kind of club therefore is asked to try to get at least four other neighborhood boys and girls to join the same club and so have a local organization and get increased benefits for all concerned.

Officers of Local Clubs.—Each local club of five or more members (there should be just as many as possible) should have an adult "local leader"—a resident teacher or some other competent person, either man or woman. Each club also elects a president, vice-president and secretary from its own membership.

County Encampments.—In nearly every county this year plans are making for holding a two-day or three-day "county encampment" of club members with lessons, addresses, demonstrations, health talks, etc.

Farmers' Mutual Fire Insurance Companies: How to Organize

FARMERS interested in forming farmers' mutual fire insurance companies can get information by addressing the state insurance commissioner at their state capital; or information may be had from the state commisioner of agriculture or experiment station.

An invaluable publication for all interested is "The Organization and Management of a Farmers' Mutual Fire Insurance Company," sent for 5 cents in stamps on application to the Division of Markets, United States Department of Agriculture, Washington, D. C. Nobody should attempt to form or run a company without getting this bulletin, which gives the reader the benefit of the experience of many such companies in various sections of the United States.

National Farmers' Organizations

NATIONAL Farmers' Union: Pres., Chas. S. Barrett, Union City, Ga.; Vice-president, A. V. Swift, Baker City, Oregon; Secretary - treasurer, Gravette, Ark.; Board of Directors: Maurice McAuliffe, Salina, Kansas, Chairman; George H. Bowles, Sandiges, Va.; George Baker, Iowa; E. M. Pollard, Neb.; J. W. Batchelder, S. Dakota.

American Cotton Association: President, J. S. Wannamaker, St. Matthews, S. C.; Vice-president, B. C. Powell, Arkansas; Secretary, Harvie Jordan, St. Matthews, S. C.; Asst. Secretary, Jos. M. McCabe; Treasurer, Miss Edith M. Campbell.

National Grange: Master S. J. Lowell, Fredonia, N. Y.; Secretary, C. M. Freeman. Tippecanoe City, Ohio; Washington Representative, Dr. T. C. Atkeson, 303 7th St., N. W., Washington, D. C.

National Union American Society of Equity: President, J. H. Carnahan, Black River Falls, Wis.; Secretary-treasurer, A. O. Sampson, Madison, Wis.

National Gleaner Federation: President, Grant N. Slocum, National Gleaner Temple, Cor. Woodward and Palmer Avenues, Detroit, Mich.

National Non-partisan League: President, A. C. Townley, Endicott Building, St. Paul, Minn.

American Farm Bureau Federation: President, J. R. Howard, Clemons, Iowa; Temporary Secretary, J. W. Coverdale, Ames, Iowa.

National Dairy Union: President, N. P. Hull, Dimondale, Mich.; Secretary, William T. Creasy, Catawissa, Pa.

National Milk Producers' Association: President, Milo D. Campbell, Cold Water, Mich.

American National Livestock Association: President, J. R. Kendrick, U. S. Senator, Washington, D. C.; Secretary, T. W. Tomlinson, Denver, Colo.

International Farm Congress: President, Arthur Capper, U. S. Senator, Washington, D. C.; Board of Governors, Chairman, W. I. Drummond, Kansas City, Mo.

National Board of Farm Organizations: Secretary, Charles F. Layman, 1731 Eye St., Washington, D. C.

Virginia-Carolina Co-operative Peanut Exchange: President, Dr. E. J. Griffin, Edenton, N. C.; Vice-president, A. W. Holt, Wakefield, Va.; Secretary and Manager, J. Frank Fooshe, Suffolk, Va.

Mutual Fire Insurance for North Carolina Farmers

THE best thing North Carolina farmers wishing to organize local or county mutual fire insurance associations can do is to write State Insurance Commissioner J. R. Young, Raleigh, and the Farmers' Mutual Fire Insurance Association, T. B. Parker, president, Raleigh, and get their help. The following counties are already organized and farmers will do well to consult the secretary-treasurer named:

Branch	Secretary-Treasurer	Address
Avery, Watauga and Caldwell	J. R. Horton	Vilas
Catawba and Burke	M. A. Abernathy	Newton
Cleveland	W. R. Newton	Shelby
Franklin	S. A. Newell	Louisburg
Forsythe and Stokes	C. M. McKauglan	Winston
Granville	J. S. Watkins	Virgilina
Guilford	G. H. McKinney	Greensboro
Green	J. O. Sugg	Snow Hill
Iredell, Alexander and Davie	R. F. Rives	Statesville
Johnson	W. C. Harper (Wilson, N. C.)	Wilson, N. C.
Lenoir	Oscar Hardy	Seven Springs
Lincoln	R. M. Roseman	Lincolnton
Martin	J. L. Coltrain	Jamesville
Northampton, Hertford and Bertie	J. A. Worrell	Rich Square
Orange	J. F. McAdams	Mebane, Rt. No. 2
Pitt	Jas. I. Little	Greenvile
Richmond and Scotland	M. L. John	Laurinburg
Randolph	C. E. Allen	Asheboro
Sampson and Duplin	W. F. Peterson	Clinton
Surry	J. J. Stone	Mt. Airy
Vance	A. A. Bunn	Henderson
Wake	T. B. Parker	Raleigh
Wilkes and Yadkin	C. H. Ferguson	Wilkesboro
Warren	Geo. R. Frazier	Warren Plains

THE PROGRESSIVE FARMER
BIRMINGHAM, ALA. RALEIGH, N. C. 119 W. Hargett St.
ATLANTA, GA. Austell Bldg. MEMPHIS, TENN. Randolph Bldg. DALLAS, TEXAS Slaughter Bldg.
COMMUNICATIONS REGARDING ADVERTISING OR SUBSCRIPTIONS SHOULD BE ADDRESSED TO OFFICE NEAREST THE READER. ENTERED AT THE POSTOFFICE AT BIRMINGHAM, ALA., UNDER THE ACT OF CONGRESS OF MARCH 3, 1879.
SUBSCRIPTION RATES:
One year.....$1.00 Two years.....$1.50
Six months.....50 Three years.....2.00

Facts About Markets and Marketing

Tentative Grades for Livestock

THE following tentative classification was developed by the Bureau of Markets primarily for use in reporting livestock market prices, November 12, 1920.

CATTLE AND CALVES

A. Killing Grades

I. Beef Steers—
Subdivision of each grade are, prime, choice, good, medium, common.
1. Heavy weight (1300 lbs. up)
2. Medium weight (1100-1300 lbs.)
3. Light weight (1100 lbs. down)

II. Butcher Cattle—
Subdivision same as for beef steers, except bulls, which run choice, good, medium, common.
1. Heifers.
2. Cows.
3. Bulls and stags.

III. Cutters and Canners—

IV. Veal Calves—
Subdivisions, choice, good, medium, common.
1. Light weight (90-120 lbs.)
2. Handy weight (120-180 lbs.)
3. Medium weight (180-250 lbs.)
4. Heavy weight (250 lbs. up)

B. Stockers and Feeders
Subdivisions, selected, choice, good, medium, common for steers and stock calves. Other grades omit "selected."

I. Feeder Cattle—
1. Heavy weight feeder steers (1000 lbs. up)
2. Light and medium feeder steers (750-1000 lbs.)
3. Feeder cows.
4. Feeder bulls.

II. Stock Cattle—
1. Stock steers.
2. Stock cows.
3. Stock heifers.
4. Stock bulls.
5. Stock calves.

III. Milkers—

IV. Springers—

SWINE

A. Killing Grades
Subdivisions, choice, good, medium, common are used, except for packing sows, boars and stags.

I. Butcher, Bacon and Shipper Hogs—
1. Heavy weight (250 lbs. up)
2. Medium weight (200-250 lbs.)
3. Light weight (150-200 lbs.)
4. Light light (130-150 lbs.)

II. Packing Sows—
Smooth (250 lbs. up)
Rough (200 lbs. up)

III. Boars

IV. Stags—

V. Pigs—(130 lbs. down)

B. Stock or Feeder Pigs
1. Heavy weight (100-130 lbs.)
2. Light weight (80-100 lbs.)

SHEEP AND LAMBS

A. Killing Grades
Subdivisions, prime, choice, good, medium, common.

I. Lambs—
1. Heavy weight (84 lbs. down)
2. Medium weight (84-92 lbs.)
3. Heavy weight (93 lbs. up)
4. Spring lambs.
5. Cull lambs.

II. Yearling Wethers—
1. Handy weight (90 lbs. down)
2. Medium weight (90-100 lbs.)
3. Heavy weight (100 lbs. up)
4. Cull yearlings.

III. Wethers—

IV. Ewes—

V. Rams—

B. Feeder Sheep and Lambs
1. Feeder lambs.
2. Feeder yea lings.
3. Feeder wethers.
4. Feeder ewes.

C. Breeding Ewes—
1. Yearlings.
2. Twos and over.

GOATS

A. Killing Grades—

B. Brushers—

C. Kids—

STEPHEN BRAY,
Bureau of Markets.

Grades for Peanuts

THE following are tentative grades for peanuts as adopted at a meeting in Montgomery, Ala., of millers, dealers, and growers. Before becoming recognized standards these grades will be subject to all necessary revision:

1. There shall be three general classes known as Spanish, Runners, and Mixed.

2. There shall be three grades for each class, known as No. 1, No. 2, No. 3 Spanish; No. 1, No. 2, No. 3 Runners; No. 1, No. 2, No. 3 Mixed.

3. These grades shall be based upon the percentage of total sound meats as follows:
No. 1. 70% and up, total sound meats.
No. 2. 65-70%, total sound meats.
No. 3. 60-65% total sound meats.

4. Off grades showing either of the following shall be sold according to sample:
a. High percentage of moisture.
b. High percentage of badly blackened hulls.
c. Less than 60% sound meats.
d. More than 1% damaged meats in No. 1, 2% in No. 2, 3% in No. 3.
e. Any mixture of red peanuts.

5. Spanish and Runners shall contain not over 2% of any other variety and not over 3% shelled nuts.

6. Mixed shall include:
a. Any mixture of more than 2% of any varieties.
b. Any unmixed variety with more than 2% shelled nuts.

7. Sound meats shall mean bright, marketable kernels, free from mould or sourness.

8. Damaged meats shall mean kernels showing mould or sourness due to exposure or improper curing, but shall not include sprouted or other nuts which will dry out and be blown out with trash.

9. Shelled nuts shall mean all shelled kernels.

10. Percentages shall be based upon the weights of hand-shelled samples.

11. Price shall be based upon the highest grade, or No. 1.
No. 2 to sell for 10% less than No. 1.
No. 3 to sell for 20% less than No. 1.
12. Difference in price between Spanish, Runners, and Mixed of similar grades to be determined by the demands of the trade.

"The Market Reporter": How to Get It Free

THE United States Department of Agriculture has long given attention to problems of production. Now it is giving increased attention to marketing also.

If you are interested in keeping up with the prices and market conditions of farm products, then you ought to have that valuable new publication, "The Market Reporter," now published weekly by the Bureau of Markets. It will be sent free to those interested who apply to the Bureau of Markets, United States Department of Agriculture, Washington, D. C.

Cotton Graded Free for North Carolina Farmers

THE Extension Service of the State of North Carolina, co-operating with the United States Department of Agriculture, offers the services of its staff of expert cotton classers to grade and staple cotton for North Carolina farmers whether they want to sell, store or solicit loans. This service is free to every one, as are also the supplies for sending samples to the nearest office for classificaton.

To obtain the benefit of this service, write to the nearest office listed below, stating the number of bales you wish graded and you will be furnished supplies and the necessary information for this purpose. Upon receipt of samples at the grading office, they will immediately be classed and a certificate showing the grade and staple of each bale, according to the official United States cotton standards will be promptly returned.

The location of the different cotton grading and marketing offices, and the names of the cotton classers are as follows: P. H. Hart, specialist in cotton marketing, Agricultural Building, Raleigh, N. C.; E. I. Pool, Smithfield, N. C.; Mike H. Finn, Tarboro, N. C.; J. F. Garrell, New Bern, N. C.; L. Z. Williamson, Clinton, N. C.; James I. Johnson, Wadesboro, N. C.; L. S. Prevatt, Monroe, N. C.

United States Cotton Standards

FOLLOWING are the standards for grading cotton established by the United States Department of Agriculture:

White Cotton—
Middling Fair.
Strict Good Middling.
Good Middling.
Strict Middling.
Middling.
Strict Low Middling.
Low Middling.
Low Middling.
Good Ordinary.

Yellow Tinged Cotton—
Good Middling.
Strict Middling.
Middling.
Strict Low Middling.
Low Middling.

Yellow Stained Cotton—
Good Middling.
Strict Middling.
Middling.

Blue Stained Cotton—
Good Middling.
Strict Middling.
Middling.

Grades for Sweet Potatoes

THE Bureau of Markets of the United States Department of Agriculture recommends the following grades as a standard for the grading and marketing of sweet potatoes. The Department has no authority to promulgate standard grades for sweet potatoes, yet it is believed that with the voluntary and general support of all interested parties, these standards will assist in stabilizing the marketing of the sweet potato crop.

U. S. Grade No. 1.—U. S. Grade No. 1 shall consist of sound sweet potatoes of similar varietal characteristics which are practically free from dirt or other foreign matter, frost injury, decay, bruises, cuts, scars, cracks, and damage caused by heat, disease, insects (including weevils), or mechanical or other means.

The diameter of each sweet potato shall not be less than one and three-quarter inches nor more than three and one-half inches, and the length shall not be less than four inches nor more than ten inches, but the length may be less than four inches if the diameter is two and one-quarter inches or more.

In order to allow for variations incident to commercial grading and handling, 5 per cent, by weight, of any lot may not meet the requirements as to diameter and length, and, in addition, 6 per cent, by weight, may be below the remaining requirements of the grade.

Any lot in which the diameter is not less than one and one-half inches and which contains a greater percentage by weight of sweet potatoes below one and three-quarters inches than is permitted in U. S. Grade No. 1, but which otherwise meets the requirements of such grade shall be designated as U. S. Grade No. 1, Medium.

Any lot in which the length is not less than six inches nor more than 12 inches and which contains a greater percentage by weight of sweet potatoes above ten inches in length than is permitted in U. S. Grade No. 1, but which otherwise meets the requirements of such grade shall be designated as U. S. Grade No. 1.

U. S. Grade No. 2.—U. S. Grade No. 2 shall consist of sound sweet potatoes of similar varietal characteristics, not meeting the requirements of the foregoing grades, which are free from serious damage caused by dirt or other foreign matter, frost injury, decay, bruises, cuts, scars, cracks, heat, disease, insects, or mechanical or other means, and which are not less than one and one-half inches nor more than three and one-half inches in diameter.

In order to allow for variations incident to commercial grading and handling, five per cent by weight of any lot may not meet the requirements as to diameter, and, in addition, 6 per cent by weight may be below the remaining requirements of this grade.

U. S. Jumbo Grade.—U. S. Jumbo Grade shall consist of sound sweet potatoes of similar varietal characteristics, which are free from serious damage caused by dirt or other foreign matter, frost injury, decay, bruises, cuts, scars, cracks, heat, disease, insects, or mechanical or other means, and which are not less than three and one-half inches in diameter.

U. S. Grade No. 3.—U. S. Grade No. 3 shall consist of sweet potatoes not meeting the requirements of any of the foregoing grades.

What the Milk of the United States Is Used for

	Per Cent
Creamery butter	20
Dairy butter	16
Condensed milk	5 1-3
Cheese	4 2-3
Ice cream	4
Market milk	43
Feeding calves	4
Waste, malted milk, milk powder, etc.	3
	100

Length of Staple of Cotton

THE United States Department of Agriculture has established and given notice of the following standards for length of staple of cotton.

For the purposes of these standards:

Section 1. The length of staple of any cotton shall be the normal length by measurement without regard to quality or value, of a typical portion of its fibers under a relative humidity of the atmosphere of 65 per centum and a temperature of 70 degrees Fahrenheit.

Sec. 2. The length of staple of any cotton shall be designated by that one of the following terms which expresses its measurement in inches or fractions of an inch in accordance with section 1 of this order:

Below ¾; ¾; 13-16; ⅞; 15-16; 1; 1 1-32; 1 1-16; 1 3-32; 1⅛; 1 5-32; 1 3-16; 1 7-32; 1¼; 1 9-32; 1 5-16; 1 11-32; 1⅜; 1 13-32; 1 7-16; 1 15-32; 1½; 1 17-32; 1 9-16; 1 19-32; 1⅝; 1 21-32; 1 11-16; 1 23-32; 1¾, and upwards in like manner in gradations of thirty-seconds, disregarding any fraction less than a thirty-second.

Cotton Grading Service for South Carolina

FOLLOWING is a list of the government cotton graders in South Carolina and the points at which they are located:

R. C. Lawrence, Anderson; H. J. McCutcheon, Aiken; L. W. Tutt, Abbeville; W. B. Wise, Bennettsville; J. B. Harmon, Blackville; R. L. Williamson, Bishopville; J. Ahrens, Columbia; J. M. Maynard, Camden; R. C. Banks, Dillon; W. P. Gordon, Edgefield; J. E. Moore, Greenville; J. B. Benjamin, Kershaw; Henry Rush, Laurens; Henry McRae, Manning; J. W. Britt, Newberry; E. C. Seifert, Orangeburg; A. B. Smith, Rock Hill; A. Bramlett, St. Matthews; T. B. Sims, Sumter; W. J. Anderson, Westminster.

Upon application any of the government graders will be pleased to furnish, free of charge, cotton tags with coupons attached.—E. G. Parker, agent in Cotton Marketing, Clemson College, S. C.

Definition of Marketing Terms

ACCORDING to Weld, in his Marketing of Farm Products, there are certain classes of dealers who have fairly well defined functions in spite of the great confusion that exists in the use of terms.

By **"jobber,"** is generally meant those dealers who buy from the first-hand receivers (either commission or wholesalers) and sell to the retail stores, or other retail outlets such as fruit stands, push cart men, hotels, restaurants, steamship companies, etc. In some places, jobbers as defined above are called **"retailers,"** because they sell to retail stores. Also, some jobbers, especially those who have not established places of business, are called **"wagon men,"** because they load their purchases from wholesalers and commission men into wagons, and peddle them around among the retail stores. In many cases, especially in small cities, the first-hand receivers sell direct to the retail trade without the intervention of the jobber. Such a receiver is often said to do his own **"jobbing."** In other words, the term signifies the selling of less than carlots but in larger quantities. This may amount to a fourth, a third or half a car.

"Brokers" are usually also first-hand receivers, similar to commission men, but they ordinarily handle goods in larger quantities, act under specific directions, charge smaller fees for their services and perform fewer services on their own initiative.

"Shippers" and **"exporters"** are dealers who buy goods in one market for shipment to another. By **"scalpers"** or **"speculators"** is ordinarily meant men who buy in one market for resale in the same market.

It is well to confine the term **"commission man"** to the dealer who receives goods direct from outside shippers and who handles them on an actual commission or consignment basis. He does not become the owner of the goods he handles, but merely acts as an agent of the shipper, deducting from the gross receipts either a certain percentage or a definite charge per package or per unit of measure, to pay for his services.

North Carolina Warehouses in State System

THE North Carolina Cotton Warehouse System is in full operation. The first lease and application for license was received September 25, from the Sampson Cotton Storage Warehouse at Clinton, N. C. Eighteen applications in all have been received, as follows, figures after names indicating capacity in bales:

Clinton, 2000; Credmoor, 300; Fayetteville, 3000; Swann Station, 450; Lillington, 1000; Kelford, 500; Moncure, 600; Monroe, 5000; Selma, 600; Morven, 1500; Lamberton, 3000; Fairmont, 1000; Lilesville, 600; Chadbourn, 600; Polkton, 600; Waxhaw, 300; Sanford, 2000; Wadesboro, 350. Totals, 18 warehouses, 23,400.

How Many Hogs or Cattle Per Car?

TWENTY head of cattle weighing between 1,100 and 1,200 pounds will go into a 31-foot car, twenty-four in a 36-foot car, and twenty-seven in a 40-foot car.

The minimum weight for a 31-foot car load of hogs loaded double deck is 19,000 pounds, and 15,000 pounds loaded single deck. One hundred and fifteen 100-pound hogs, or seventy-two 200-pounders, or sixty-two 250-pound porkers will be accommodated in a 31-foot car. One hundred thirty-two 100-pounders, or eighty-four 200-pound porkers into a 36-foot car. One hundred forty-seven 100-pound porkers, or ninety 200-pound animals, or eighty 250-pound animals will go into a 40-foot car.

The Shipper's Dictionary

THE **consignor** is party who makes shipment.

The **consignee** is party to whom shipment is made.

A **bill of lading** is the railway or steamship company's receipt of acknowledgement for your shipment.

An **expense bill** is a receipt given consignee at point of delivery covering transportation charges.

An **exception against expense bill** is notations made thereon by the company making delivery showing any shortage or damage to shipment.

Quotations made you delivered, or **f. o. b. your station** means transportation charges are to be prepaid.

When you quote a customer prices **f. o. b. his station,** you are to pay transportation charges.

A shipment sent **"charges collect"** means the other fellow pays the freight.

C. O. D. shipment means that in addition to the transportation, the consignee is to pay for the goods thus received. You can, however, pay transportation charges and still let shipment go C. O. D.

Demurrage is charges made for detention of cars for a longer period than provided by law.

Storage charges apply likewise to less than carload shipments which are held in depots or warehouses of carriers for a longer period than provided.

Rates and **tariffs** of all common carriers are open for the inspection of the public.

An **"order notify"** shipment or shipment B-L (bill of lading) attached, which is now becoming very common, is one wherein the shipment is made and bill of lading attached to a draft which is sent to your bank for payment. You pay your banker the amount of invoice, he then delivers to you the bill of lading. This is presented to your agent and the shipment is delivered to you.

Embargo is another term now very much in the limelight. This is the refusal of the transportation companies to receive certain commodities for shipment to any specified point. Embargoes exist by the thousands now and are made necessary on account of congestion. Fortunately they do not obtain long at any one point.

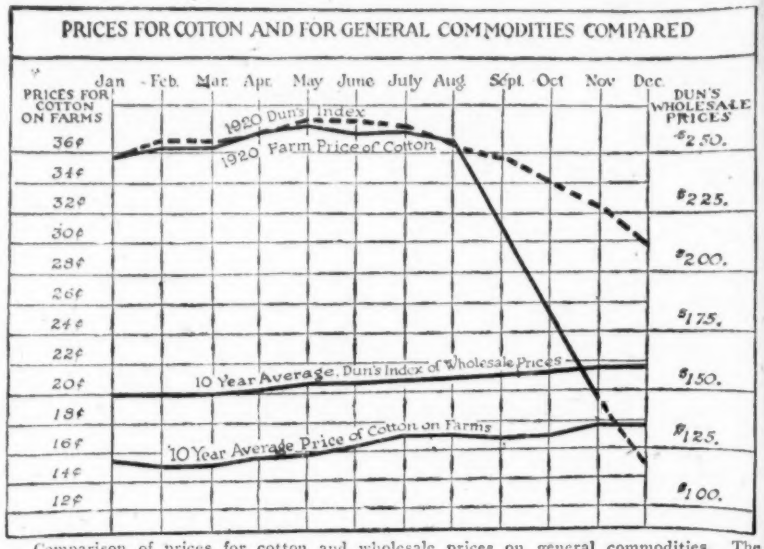
Federal quarantine regulations are the laws governing shipments of animals, seeds, and nursery stock from infected to non-infected territory, and the average farmer would do well to familiarize himself with these regulations. Often you make sales, and on account of these regulations are unable to make delivery.

W. D. T.

Cotton Review and Suggestions

Cotton: Acreage, Price, and Yield, With Variations From Year to Year

Year	Acreage	Per Cent of Variation From Previous Year	Price Per Pound	Per Cent of Variation From Previous Year	Yield Per Acre, Lbs.
1881	16,711,000	Increase 4.7	.....	.....	149.8
1882	16,277,000	Decrease 2.6	9.1c	.....	185.7
1883	16,778,000	Increase 3.0	9.1c	.....	164.8
1884	17,440,000	Increase 3.7	9.2c	Increase 1.1	153.8
1885	18,301,000	Increase 4.9	8.4c	Decrease 8.7	164.4
1886	18,455,000	Increase 0.8	8.1c	Decrease 3.5	169.5
1887	18,641,000	Increase 1.0	8.5c	Increase 4.9	182.7
1888	19,059,000	Increase 2.2	8.5c	.....	180.4
1889	20,175,000	Increase 5.8	8.5c	.....	159.7
1890	19,512,000	Decrease 3.3	8.6c	Increase 1.2	187.0
1891	19,059,000	Decrease 2.3	7.2c	Decrease 16.3	179.4
1892	15,911,000	Decrease 16.5	8.3c	Increase 15.3	209.2
1893	19,525,000	Increase 22.7	7.0c	Decrease 15.6	149.9
1894	23,688,000	Increase 21.3	4.6c	Decrease 34.3	195.3
1895	20,185,000	Decrease 14.7	7.6c	Increase 65.2	155.6
1896	23,273,000	Increase 15.3	6.7c	Decrease 11.8	184.9
1897	24,320,000	Increase 4.5	6.7c	.....	182.7
1898	24,967,000	Increase 2.6	5.7c	Decrease 14.9	220.6
1899	24,327,000	Decrease 2.5	7.0c	Increase 22.8	183.8
1900	24,933,000	Increase 2.5	9.2c	Increase 31.4	194.4
1901	26,774,000	Increase 7.4	7.0c	Decrease 23.9	170.0
1902	27,175,000	Increase 1.5	7.6c	Increase 8.5	187.3
1903	27,052,000	Decrease 0.4	10.5c	Increase 38.1	174.3
1904	31,215,000	Increase 15.4	9.0c	Decrease 14.3	205.9
1905	27,110,000	Decrease 13.1	10.8c	Increase 20.0	186.6
1906	31,374,000	Increase 15.7	9.6c	Decrease 11.1	202.5
1907	29,660,000	Decrease 5.4	10.4c	Increase 8.3	179.1
1908	32,444,000	Increase 9.4	8.7c	Decrease 16.3	194.9
1909	30,938,000	Decrease 4.4	13.9c	Increase 59.8	154.3
1910	32,403,000	Increase 4.7	14.1c	Increase 1.5	170.7
1911	36,045,000	Increase 11.2	8.8c	Decrease 37.6	207.7
1912	34,283,000	Decrease 4.9	11.9c	Increase 35.2	190.9
1913	37,089,000	Increase 8.2	12.2c	Increase 2.5	182.2
1914	36,832,000	Decrease 0.7	6.8c	Decrease 44.3	209.2
1915	31,412,000	Decrease 14.7	11.3c	Increase 66.2	170.3
1916	34,985,000	Increase 11.3	19.6c	Increase 73.4	156.6
1917	33,841,000	Decrease 3.3	27.7c	Increase 41.3	159.7
1918	36,008,000	Increase 6.4	27.6c	Decrease 0.3	159.6
1919	33,344,000	Decrease 7.4	35.7c	Increase 29.3	158.2
1920	35,504,000	Increase 6.4	.....	.....	165.0

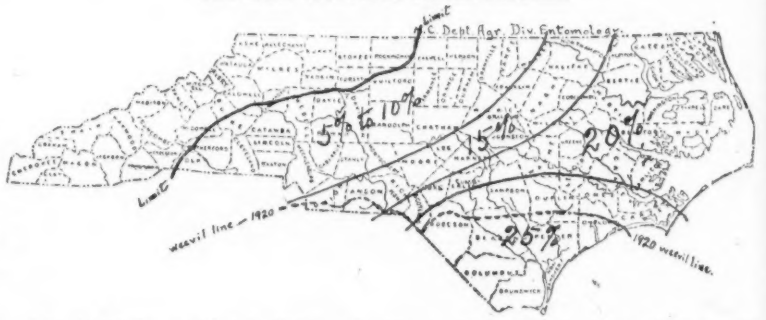


Comparison of prices for cotton and wholesale prices on general commodities. The cotton prices used are average prices paid to producers in the United States as computed by the United States Department of Agriculture, while Dun's index is an average of wholesale prices on a great many commodities. The ten-year period covered was 1910 to 1919. During the recent period of decline, cotton prices fell more precipitately than almost any other commodity and many times more rapidly than the general commodity index lines. Cotton is now below the average price of the ten-year period 1910 to 1919, while the wholesale price index is about 75 per cent higher than the ten-year average. The December, 1920, figure for cotton has not yet been made public and the dotted portion of the line for cotton prices to farmers is an approximation based upon prevailing terminal markets during the early part of December.

Cotton Seed: Production and Exports, 1910-1919

Year	Production Seed	Seed Crushed	Production: Oil	Production: Cake and Meal	Production: Hulls	Production: Linters	Exports: Seed	Exports: Oil	Exports: Cake and Meal
	Tons	Tons	Gallons	Tons	Tons	Bales (500 lbs. net)	Tons	Gallons	Tons (2,000 lbs. net)
1910	5,175,000	4,106,000	167,970,000	1,792,000	1,375,000	380,000	7,000	30,069,000	402,000
1911	6,997,000	4,921,000	201,650,000	2,151,000	1,642,000	533,000	32,000	53,263,000	647,000
1912	6,104,000	4,580,000	185,750,000	1,999,000	1,540,000	583,000	12,000	42,031,000	564,000
1913	6,305,000	4,848,000	193,330,000	2,220,000	1,400,000	660,000	8,000	25,728,000	400,000
1914	7,186,000	5,780,000	229,260,000	2,648,000	1,677,000	820,000	3,000	42,449,000	740,000
1910-1914 average	6,353,000	4,847,000	195,592,000	2,162,000	1,527,000	595,000	12,000	38,708,000	551,000
1915	4,992,000	4,202,000	167,110,000	1,923,000	1,220,000	890,000	1,000	35,535,000	529,000
1916	5,113,000	4,479,000	187,688,000	2,225,000	969,000	1,273,000	500	21,198,000	575,000
1917	5,040,000	4,252,000	174,996,000	2,068,000	996,000	1,130,000	780	13,437,000	22,000
1918	5,360,000	4,466,000	176,033,000	2,159,000	1,124,000	929,000	800	23,828,000	156,000
1919	4,898,000	.....	.....	.....	.....	.....	.....	.....	.....
1915-1919 average	5,080,600	.....	.....	.....	.....	.....	.....	.....	.....

The Boll Weevil in North Carolina



The dotted line starting in Union and coming out in Onslow shows where weevils reached in 1920. The other lines mark off areas, and the percentage figures between lines show a conservative expectation of **average reduced yield after weevil is fully established—5 to 25%**—if direct methods against it are not fully used. Poisoning, gathering of squares, etc., are the methods to offset these losses. Damage will vary greatly from year to year. —Franklin Sherman, State Entomologist.

Highest and Lowest Prices for Cotton

IN NEW YORK for middling uplands cotton from January 1 to December 31 of the years named.

Year	High	Low	Year	High	Low
1862	69	20	1892	10	6
1863	93	51	1893	9	7
1864	190	72	1894	8	5
1865	120	35	1895	9	5
1866	52	32	1896	8	7
1867	36	15	1897	8	5
1868	33	16	1898	6	5
1869	35	25	1899	7	5
1870	25	15	1900	11	7
1871	24	14	1901	12	7
1872	27	18	1902	9	8
1873	21	13	1903	14	8
1874	18	14	1904	17	6
1875	17	13	1905	12	7
1876	13	10	1906	12	9
1877	13	10	1907	13	10
1878	12	8	1908	12	9
1879	13	9	1909	16	9
1880	13	10	1910	19	13
1881	13	10	1911	16	9
1882	13	10	1912	13	9
1883	11	10	1913	14	11
1884	11	9	1914	13	7
1885	11	9	1915	12	7
1886	9	8	1916	20	11
1887	11	9	1917	31	14
1888	11	9	1918	38	25
1889	11	9	1919	40	25
1890	12	9	1920	..	..
1891	9	8			

Cotton: World's Visible Supply

American

Total today	4,260,380
Total this day last week	4,137,341
Total this day last year, Dec. 12, 1919	4,319,056
Total close this week year before last, December 13, 1918	3,091,448
Increase compared with last week	123,039
Decrease compared with last year	58,676
Increase compared with year before last	1,168,932

Other Kinds

Total today	1,645,000
Total this day last week	1,621,000
Total this day last year, Dec. 12, 1919,	1,198,000
Total close this week year before last, December 13, 1918	1,154,000
Increase compared with last week	24,000
Increase compared with last year	447,000
Increase compared with year before last	491,000

Total All Kinds

Total today	5,905,380
Total this day last week	5,758,341
Total this day last year, Dec. 12, 1919.	5,517,056
Total close this week year before last, December 13, 1918	4,245,448
Increase compared with last week	147,039
Increase compared with last year	388,324
Increase compared with year before last	1,659,932

Variations in World's Visible Supply—During Week

	This Year	Last Year	Year Before
American,	Incr. 123,039	Incr. 101,329	Incr. 83,611
Other kinds,	Incr. 21,000	Incr. 36,000	Incr. 17,000
Total,	Incr. 147,039	Incr. 137,329	Incr. 100641

Of the World's Visible Supply.—(Figures in 000's of Bales)

There is now afloat and held in:

Great Britain and Cont.	2,212	2,039	789
Egypt	177	210	353
India	888	504	555
United States	2,628	2,764	2,548
Total	5,905	5,517	4,245

Friday, December 10, 1920.

Weight of a Bushel of Cotton Seed

BAILEY'S Cyclopedia of American Agriculture gives the legal weight of a bushel of cotton seed in those states having such standard as follows:

Arkansas	33 1-3 lbs. to the bushel
Alabama	32 lbs. to the bushel
Florida	32 lbs. to the bushel
Georgia	30 lbs. to the bushel
Mississippi	32 lbs. to the bushel
Missouri	33 lbs. to the bushel
North Carolina	30 lbs. to the bushel
South Carolina	30 lbs. to the bushel
Tennessee	28 lbs. to the bushel
Texas	32 lbs. to the bushel
Virginia	32 lbs. to the bushel

Yield in Products of a Ton of Cotton Seed and of Soy Beans

	Cotton Seed Lbs.	Soy Beans Lbs.
Meal	950	1,650
Oil	315	250
Hulls	525	....
Linters	75	....
Waste	135	100
	2,000	2,000

How to Check Anthracnose

TO GET rid of anthracnose in cotton, select next year's seed not only from stalks free from the disease, but also standing several feet from any diseased stalks. Then if the storage boxes or cotton gins you use have been used for anthracnose-infected cotton, clean them before storing or ginning your disease-free cotton.

To Grow Cotton Successfully Under Weevil Conditions

THE United States Department of Agriculture advises that you must—

1. Select warm, fertile, well-drained soil.
2. Prepare a good seed bed.
3. Fertilize liberally.
4. Plant reasonably early.
5. Use good seed of an early maturing variety adapted to the locality.
6. Cultivate shallow—often, and until late in season.
7. Carefully pick up and destroy weevil infested squares, especially during the first month.
8. Destroy all cotton stalks three weeks or more before killing frost.

If you follow these instructions you can, when the weevil comes, on a reduced acreage continue to grow cotton profitably. If in addition you grow the necessary feed and food crops—have a good garden, produce your own meal, milk, butter, eggs, etc., with a surplus for market—you will live better and perhaps make more clear money than you did before.—United States Department of Agriculture.

Close Spacing Gives Biggest Yield of Cotton

FROM North Carolina to Texas, nearly all experiment station evidence favors close spacing of cotton as giving the biggest yields. On average uplands, rows not wider than 3½ feet and plants a hoe's width in the drill should be the aim. On rich land, 4-foot rows and cotton 15 to 18 inches in the drill will probably be about right.

Don't throw away last year's "Reference Special" just because you have this year's. Much valuable information in our 1020 issue is not repeated this time.

Average Price Obtained by Producers for Cotton and Cotton Seed, by States, 1912 to 1920

(Compiled by the Bureau of Crop Estimates, Department of Agriculture)

State	Yearly Average Price of Cotton Lint per Pound in Cents. Crop for—									Cotton Seed per Ton. Crop for—								
	*1920	1919	1918	1917	1916	1915	1914	1913	1912	*1920	1919	1918	1917	1916	1915	1914	1913	1912
United States	.....	35.36	28.76	27.12	17.28	11.22	7.33	12.48	11.48	.....	$67.18	$65.32	$66.08	$50.50	$33.60	$17.90	$22.40	$19.20
Alabama	20.9	34.94	28.79	27.43	17.71	11.08	7.29	12.86	11.44	$34.00	$72.85	67.15	69.17	54.56	36.90	18.90	23.50	19.50
Arkansas	19.7	35.28	28.11	28.02	17.59	11.64	7.03	12.08	11.78	29.90	63.30	64.32	65.79	50.26	34.10	17.00	19.40	20.00
Florida	24.7	36.08	40.74	45.75	24.45	14.81	10.74	14.57	14.65	35.00	66.80	66.23	64.19	47.63	31.00	17.30	21.00	17.50
Georgia	20.3	35.87	29.35	28.02	18.04	11.30	7.44	12.90	11.60	32.00	75.08	67.76	69.26	55.66	36.90	20.20	24.20	20.50
Louisiana	18.3	36.02	28.50	26.36	16.85	10.94	7.63	12.24	11.38	27.90	65.57	63.80	63.67	49.45	32.00	18.60	18.50	19.70
Mississippi	20.0	36.18	28.21	27.69	18.22	11.51	7.29	12.50	11.87	26.70	65.80	64.84	66.92	52.18	34.30	18.70	22.40	21.80
Missouri	15.2	31.62	28.00	27.50	16.93	11.02	6.82	12.50	11.80	26.00	72.68	62.70	64.20	52.18	31.20	22.00	21.20	22.10
North Carolina	19.1	35.44	27.79	27.61	17.36	11.20	7.65	12.73	11.48	35.90	74.30	67.36	68.25	53.74	37.00	21.60	26.00	22.10
Oklahoma	17.5	35.98	27.30	25.85	17.05	11.13	6.81	11.78	11.12	25.00	60.02	62.17	61.75	51.82	30.60	14.60	20.50	17.50
South Carolina	20.0	36.36	29.10	27.33	17.63	11.21	7.75	12.86	11.70	30.00	74.98	68.03	69.45	54.98	36.50	20.80	25.75	21.20
Tennessee	20.5	34.05	27.59	27.47	17.56	11.40	7.09	12.82	11.94	33.00	66.73	64.19	66.27	51.59	35.08	18.30	24.50	22.90
Texas	18.6	34.40	29.48	26.00	16.63	11.02	7.22	12.19	11.29	24.60	59.93	62.28	64.24	45.80	29.30	15.30	20.60	17.10

*Prices November 1, 1920. *Prices October 1, 1920.

Information for Livestock Men and Dairy Farmers

Age at Which Cows Give Most Milk

HOLSTEIN-FRIESIAN maximum milk yield occurs at 8 years, 4 months, 29 days.

Guernsey maximum milk yield occurs at 9 years, 8 months, 5 days.

Jersey maximum milk yield occurs at 8 years, 1 month, 13 days.

Feeding Dairy Cows

GRAIN should be fed to heavy-producing cows under all pasture conditions, says Farmers' Bulletin No. 743. The following table is furnished as a guide to feeding grain with an abundant pasture. Variations should be made to suit different conditions and individual cows.

Jersey cow		Holstein-Friesian or Ayrshire cow	
Daily Milk Production (pounds)	Lbs. of Grain	Daily Milk Production (pounds)	Lbs. of Grain
20	3	25	3
25	4	30	5
30	6	35	7
35	8	40	9
40	10	50	10

Grain fed to cows on pasture need not contain the same percentage of protein as for winter feeding. Pasture being an approximately balanced ration, the grain ration should have about the same proportion of protein to other nutrients. The following mixtures are suggested for supplementing pasture without other roughage:

Mixture No. 1:—
Ground oats ..... 100 pounds
Wheat bran..... 100 pounds
Corn meal ..... 50 pounds
Per cent digestible protein, 10.3

Mixture No. 2:—
Wheat bran..... 100 pounds
Corn meal ..... 100 pounds
Cottonseed meal..... 25 pounds
Per cent digestible protein, 12.7

Mixture No. 3:—
Corn-and-cob meal ..... 250 pounds
Cottonseed meal..... 100 pounds
Per cent digestible protein, 19.5

Summary of Tick Eradication Progress

THE relative progress made by the Southern states originally infested with cattle ticks is shown by a tabulated statement just issued by the United States Department of Agriculture. The figures are complete to December 1, 1920, the end of the fiscal year for this class of work. The total tick infested area on July 1, 1906, when systematic eradication began, was 728,565 square miles. On December 1, 1920, 70 per cent of that area had been freed of ticks and released from quarantine, leaving only 218,474 square miles infested with the pest. The area which still remains infested and therefore under Federal quarantine is as follows:

	Square miles remaining infested
Alabama	3,252
Florida	47,980
Arkansas	19,632
Georgia	15,694
Louisiana	15,490
North Carolina	10,087
Oklahoma	4,047
Texas	100,606
Virginia	1,686

The total area released during the year 1920 amounted to 32,171 square miles. Owing to discontinued local effort to complete tick eradication in some areas released from quarantine, it was found advisable to requarantine counties and parishes during the last year as follows: Alabama 1, Arkansas 9, and Louisiana 14; also a few portions of counties or parishes in these states.

Points in Judging Beef Cattle

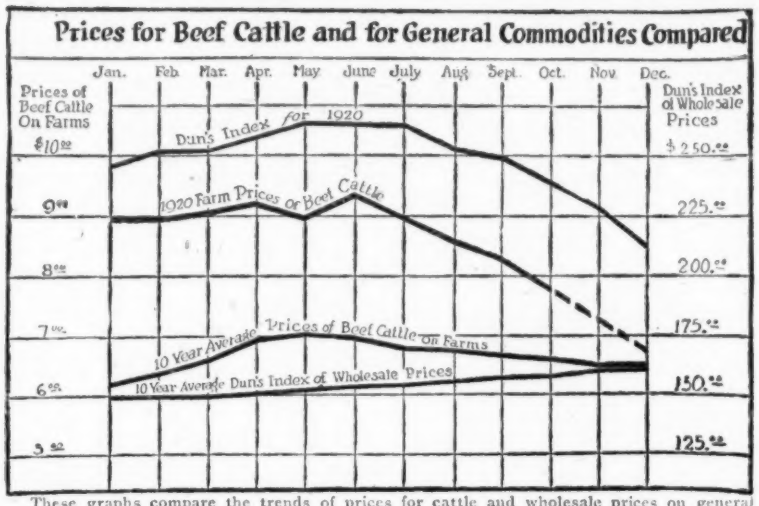
WEIGHT is judged according to the age of the animal. Most beef animals are sold to the butcher by the pound. Therefore, weight is a very important factor where other things are equal. The heaviest animal is superior because of its greater selling value.

2. The form or general conformation should be brick shape, that is, the top and bottom lines should be straight and practically parallel, making the animal have a shape somewhat like a brick, looking at it from the side. The body should be as close to the ground as possible, showing good depth.

3. **Quality** is indicated by fine bone and mellow, elastic hide. A smooth pliable skin over the ribs indicates quality. By feeling the skin you get an idea of the smoothness and quality of the flesh underneath. This is the best indication we have of the kind of meat the animal will produce.

4. **Condition** means whether the animal carries a sufficient amount of flesh and is in a good healthy condition or not. The flesh should be smooth and firm over the entire body, and not be put on in "patches" or "rolls".

5. The **muzzle** should be broad with a large mouth. A beef animal with a small narrow mouth indicates a poor feeder, while one with a large broad muzzle indicates a good feeder. The nostrils should be large, indicating good breathing capacity.



These graphs compare the trends of prices for cattle and wholesale prices on general commodities. The cattle prices are average prices paid to producers in the United States as computed by the United States Department of Agriculture, while Dun's index is an average of wholesale prices on a great many commodities. The ten-year period was 1910-1919. The wholesale index line shows almost no seasonal variation, while beef cattle prices are highest in April, May, and June. In the 10-year average beef cattle were above the general commodity line, but in 1920 their positions were reversed. Although cattle prices were not inflated as much by war conditions as most commodities were, during the period of deflation covering the last few months cattle prices have gone down as fast or faster than general commodities. The figures for November and December, 1920, are not yet available, so that the dotted portion of the line for cattle prices during 1920 is an approximation based on the decline in central markets.

6. The **eyes** should be large and bright and placed well apart. An ideal feeder head is one that is broad in the forehead and between the eyes with a straight face and a rather massive appearance in front.

7. The **ears** should be of medium size and not coarse.

8. The **neck** should be short and blend well into the shoulders and head.

9. The **shoulder** veins, or muscling between the neck and shoulders, should be smooth with the neck blending into the shoulders without any rough appearance.

10. The **shoulders** should be deep set, compact, broad at the top, and well covered with flesh.

11. The **breast** should be wide and full, indicating strong lung capacity, the brisket standing forward, giving the animal a square front and massive appearance.

12. The **legs** should be short, the bones fine but heavy enough to carry the animal easily. The muscles should be heavy and the knees straight. When the knees are too close together they cause the animal to be knock-kneed and when turned out they give the animal a bow-legged appearance. If the legs are too close together the animal does not have sufficient chest capacity.

13. The **chest** should be broad and deep, indicating a large lung capacity. The fore flank should extend well down, the heart girth should be large and the crop or muscling immediately back of the shoulders should be thick and well filled out.

14. The **back** should be broad and covered with an abundance of thick flesh smoothly placed. The back should be not only strong, but straight so that it can carry the body properly and, at the same time, give a good appearance.

15. The loins should be long, thick, wide, and heavily muscled. Here is where we get some of the highest priced meat and the greater the portion of meat carried here the more valuable the animal.

16. The **ribs** should be long and well arched, giving the animal a large capacity. They should be smoothly and deeply fleshed.

17. The **flanks** should be deep and full, making the under lines straight. One of the best indications as to the degree of fatness of the animal is the thickness of the flanks.

18. The **hips** should be broad and smoothly covered. They should not be extremely wide apart or prominent, but should be long and level and not narrow and drooping. They should be covered with an abundance of flesh and free from rolls or patches, particularly around the tail head.

19. The **thighs** should be heavily muscled, with quarters extending well down the hocks.

20. The **twist** is the muscling on the inside of the thigh and should extend well down towards the hock giving a full appearance.

21. The **legs** should be short, giving the animal a blocky appearance and should extend perpendicularly from the hock down to the pastern. The hock should be turned neither in or out, but should be straight, giving the animal a square appearance, and the toes should point straight forward.

Progress in Tick Eradication, July 1, 1906, to December 1, 1920

State	Counties infested July 1, 1906	Counties infested Dec. 1, 1920		Counties released		Area infested July 1, 1906	Area infested Dec. 1, 1920	Area Released	
		Whole	Part	Whole	Part				
	No.	No.	No.	No.	No.	Sq. Miles	Sq. Miles	Sq. Miles	Per Cent
Alabama	67	2	3	62	3	51,279	3,252	48,027	94
Arkansas	75	25	7	43	7	52,525	19,632	32,393	63
California	15	.....	.....	15	.....	79,924	.....	79,924	100
Florida	51	47	.....	4	.....	54,861	47,980	6,881	13
Georgia	152	31	.....	121	.....	57,438	15,694	41,744	73
Kentucky	2	.....	.....	2	.....	841	.....	841	100
Louisiana	65	20	1	44	1	45,409	15,490	29,919	66
Mississippi	81	.....	.....	81	.....	46,362	.....	46,362	100
Missouri	4	.....	.....	4	.....	1,386	.....	1,386	100
North Carolina	75	20	1	54	1	37,365	10,087	27,278	73
Oklahoma	61	2	2	57	2	47,890	4,047	43,843	92
South Carolina	44	.....	.....	44	.....	30,495	.....	30,495	100
Tennessee	42	.....	.....	42	.....	16,987	.....	16,987	100
Texas	198	102	6	90	6	191,885	100,606	91,279	48
Virginia	30	3	1	26	1	13,918	1,686	12,232	88
Total	962	252	21	689	21	728,565	218,474	510,091	70

—Bureau of Animal Industry.

Don'ts for the Dairy Sire

DON'T underfeed him when young.
Don't underfeed him when mature.
Don't keep him shut up without exercise.
Don't allow him to run with the cows.
Don't lead him with a rope or strap.
Don't allow any one to tease or plague him.
Don't trust him at any time.
Don't use him too heavily before he is mature, or after.
Don't forget he is a "bull".

Ten Rules of Beef Production

PLENTY of pasture and feed.

2. The right kind of cows—those that will produce good calves regularly.

3. A good, purebred, registered bull—one that will give good calves persistently.

4. A large calf crop. This means that all cows shall drop calves, and that calves shall be properly cared for at birth.

5. Proper care of the breeding herd and the calves.

6. Selection of good heifer calves to replace old or inferior cows.

7. Prevention of diseases among the breeding herd and the younger stock.

8. Shelter sufficient to protect the cattle from both severe cold and extremely hot weather.

9. A practical knowledge of fattening cattle for market.

10. Marketing to advantage.—United States Department of Agriculture.

Raising Calves on Milk Substitutes

THE need for home-raised calves has led to a search for a "milk substitute." While the feeds which have been tried have given some degree of success, there has not yet been found a complete or entirely satisfactory substitute for milk. It is doubtful if any article or combination of articles that will completely take the place of milk in the diet during the first two months of the calf's life can be found.

There are a number of so-called milk substitutes on the market. Most of them are sold in the form of calf meal, and with proper care, many of them will give good results. It should be clearly understood at the outset that calves raised on calf meals will not be as fat and sleek as those raised on milk. They will be growthy and healthful, however, provided they are given proper attention. Calf meals can be bought from local dealers at varying prices or they may be mixed at home if the proper ingredients can be secured. In many cases the home-mixed calf meals are superior to the ones bought on the market, and as a rule they are considerably cheaper.

A calf meal, in order to give success, should be made up of ingredients that are easily and readily digested and that are not too expensive. A few of the most commonly used materials are: Fine corn meal, flour middlings, wheat flour (poor grade), ground rice, oat flakes, barley malt, cocoanut meal, linseed meal, flaxseed meal, cottonseed meal, blood flour, blood meal, and dried skim milk or skim milk powder. Skim milk powder is not absolutely essential and it is rather expensive, but many of the calf meals that have given the best results have contained considerable amounts of it.—Missouri Extension Service.

Dairy Cows

SHOWING NUMBER OF DAIRY COWS, GAIN OR LOSS IN NUMBERS, PER CENT GAIN OR LOSS IN NUMBER, AVERAGE PRICE PER HEAD, PER CENT INCREASE IN VALUE PER HEAD, FARM VALUE, AND PER CENT GAIN IN FARM VALUE, FOR 13 SOUTHERN STATES

Thirteen Southern States	Number (Thousands)				Gain or Loss in Numbers (Thousands				Gain or Loss in Numbers Per Cent				Dollars Average Price per Head				Increase in value per cent 3 year	(Thousand dollars) Farm Value				Per cent increase in farm value (Thousand dollars)
	Jan. 1, 1920	Jan. 1, 1919	Jan. 1, 1918	Jan. 1, 1917	Jan. 1, 1917 to Jan. 1, 1918	Jan. 1, 1918 to Jan. 1, 1919	Jan. 1, 1919 to Jan. 1, 1920	3 year increase	Jan. 1, 1917 to Jan. 1, 1918	Jan. 1, 1918 to Jan. 1, 1919	Jan. 1, 1919 to Jan. 1, 1920	3 year increase	Jan. 1, 1920	Jan. 1, 1919	Jan. 1, 1918	Jan. 1, 1917		Jan. 1, 1920	Jan. 1, 1919	Jan. 1, 1918	Jan. 1, 1917	
Virginia	437	424	377	373	4	47	13	64	1	12.5	4	17	76	69	57	46.50	63	33,212	29,256	21,849	17,344	91
North Carolina	328	315	309	315	6	6	13	13	—1.9	1.9	4.1	4.1	78	69	57	39	100	25,584	21,735	15,759	12,285	108
South Carolina	211	203	193	189	4	10	8	23	2.1	5.2	4.4	12.2	85	78	57.50	40	113	17,935	15,834	11,098	7,560	137
Georgia	461	452	435	418	17	17	9	43	4	4	2	10.3	65	65	57.80	37	76	29,965	29,380	22,533	15,466	93
Florida	156	149	145	141	4	4	7	15	2.8	2.7	4.7	10.7	72	61	53	43	67	11,232	9,089	7,685	6,063	85
Kentucky	457	452	435	418	17	17	5	39	4	4	1.1	9.3	73	72	61	49.50	47	33,361	32,544	26,535	20,691	61
Tennessee	384	380	373	366	7	7	4	18	2	1.9	1	5	70	66	55	43	63	26,880	25,080	20,515	15,738	70
Alabama	502	494	433	405	28	61	8	97	7	14	1.6	24	57	58	47.50	36.50	56	28,614	28,652	20,568	14,782	92
Mississippi	571	549	508	475	33	41	22	96	7	8	5	20.2	62	60	47.50	38	63	35,402	32,940	24,130	18,050	96
Louisiana	378	363	324	300	24	39	15	78	8	12	4.1	26	67	58	49.50	42	60	25,326	21,054	16,038	12,600	101
Texas	1,138	1,094	1,128	1,175	—47	—34	44	—37	—4	—3	4	—3.1	77	63	57.50	54.50	42	87,626	68,922	64,860	64,038	37
Oklahoma	550	561	562	535	27	—1	—11	15	5	—.2	—2	2.8	68	68	67.70	60	130	37,400	37,400	38,043	32,100	17
Arkansas	452	443	425	405	20	18	9	47	5	4.2	2.03	11.3	56	59	56	44	36	25,312	38,148	23,800	17,820	42
All thirteen states	6,025	5,879	5,647	5,515	137	232	146	510	2.4	4.1	2.5	9	69	64	55.50	46	50	417,849	377,198	313,056	254,537	64
The United States	23,747	23,475	23,284	22,894	390	191	272	853	1.7	.8	1.1	3.7	85.13	78.20	70.59	59.63	42.5	2,021,680	1,835,770	1,643,639	1,365,251	48

1921 Prices

Quality—Higher Price—Lower

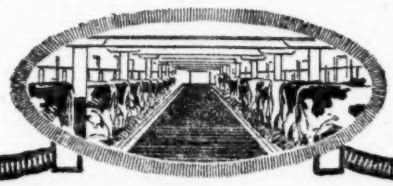
You may now purchase your favorite type of Champion Spark Plug anywhere in the United States at these prices—

Champion X (Ford)	$ .75 *formerly* $ .90
Champion Regular	$ .90 *formerly* $1.00
Champion Heavy Stone	$1.00 *formerly* $1.25

Over 30,000,000 Champion Plugs sold this past year.

Champion Spark Plug Co.
Toledo, Ohio

Champion
Dependable Spark Plugs



The Handiest Help

on the farm and a most important aid to increase the production of your livestock and poultry is that combined paint and disinfectant which brings sunshine and health into stables, pig pens, hen houses, dairies, cellars and outbuildings.

CARBOLA
Five Reasons for White Pain

gives more light and better sanitation than you can get by using whitewash and disinfectants, and it is applied in one operation instead of two, saving half the time and labor. It gives a snowy whiteness to walls and other surfaces, and at the same time, because of the strong disinfectant it contains, helps to keep your buildings free from lice and mites and destroys the germs of many of the contagious diseases that affect poultry, live stock and human beings.

Carbola comes in powder form and is ready to use as soon as mixed with water. No straining. No waiting. It does not clog sprayer. It does not flake, blister or peel off. Harmless to smallest chick or stock that licks a painted surface.

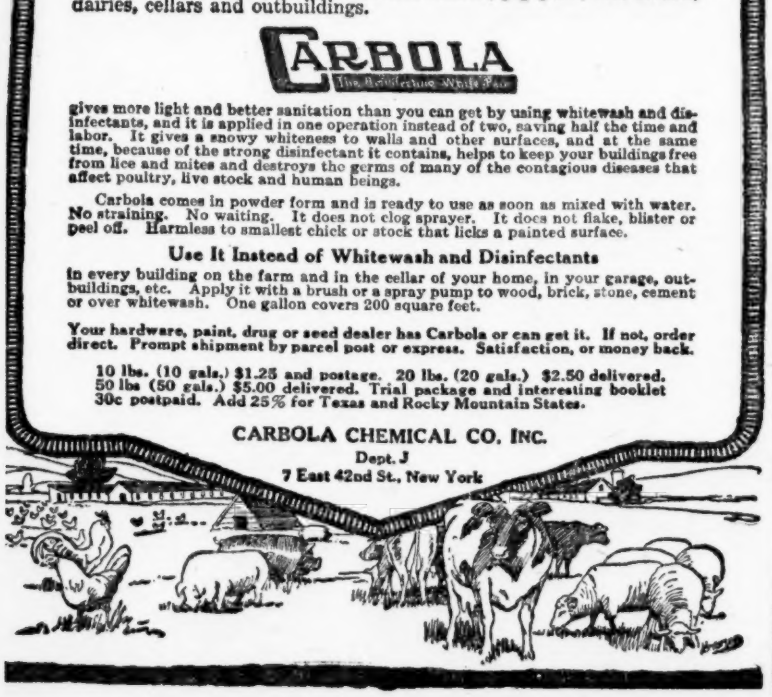
Use It Instead of Whitewash and Disinfectants

in every building on the farm and in the cellar of your home, in your garage, outbuildings, etc. Apply it with a brush or a spray pump to wood, brick, stone, cement or over whitewash. One gallon covers 200 square feet.

Your hardware, paint, drug or seed dealer has Carbola or can get it. If not, order direct. Prompt shipment by parcel post or express. Satisfaction, or money back.

10 lbs. (10 gals.) $1.25 and postage. 20 lbs. (20 gals.) $2.50 delivered.
50 lbs (50 gals.) $5.00 delivered. Trial package and interesting booklet 30c postpaid. Add 25% for Texas and Rocky Mountain States.

CARBOLA CHEMICAL CO. INC.
Dept. J
7 East 42nd St., New York



Fertilizers and Manures

Home Mixing of Fertilizers: Rules for

THE following table will help in calculating home mixtures. In making ton lots, to get 1 per cent, use amounts shown in first column; for 2 per cent, use the second column, and so on.

Example: To make up a 2-8-2 mixture using acid phosphate, nitrate of soda, and potassium sulphate, use 266 pounds of nitrate of soda, 1,142 pounds of 14 per cent acid phosphate, 80 pounds of sulphate of potash; total 1,488 pounds; make up total of 2,000 pounds with 512 pounds of ground limestone, dried peat, or muck or sand. Like the fertilizer ingredients themselves, any filler used should be fine and dry.

A 4-7-10 mixture of the same materials would call for 532 pounds of nitrate of soda, 1,000 pounds of acid phosphate, and 400 pounds of potassium sulphate; total 1,932 pounds; add 68 pounds of filler to make up 2,000 pounds.

Making a Fertilizer Formula.—A general rule to use in making up formulas is first to decide what percentages are required, and then what materials shall be used. Start with the phosphoric acid (P_2O_5). Acid phosphate is almost universally used for this. With 12 per cent goods and 8 per cent of phosphoric acid desired in the mixture, the reasoning would be as follows: If the whole mixture were acid phosphate, it would contain 12 per cent; as 8 per cent is desired, we take eight-twelfths or two-thirds of the mixture of acid phosphate or 1,222 pounds; if 6 per cent were wanted we would take six-twelfths or one-half or 1,000 pounds in a ton. Similarly with nitrogen. If nitrate of soda contains 15.65 per cent of nitrogen, and we want 2 per cent of nitrogen, 2-15.65 or approximately one-eighth of the mixture or 250 pounds in a ton will be the amount.

Similarly with potash. If we have Nebraska potash salts carrying 22 per cent of potash, and desire 2 per cent in the mixture, we put in two twenty-seconds or one-eleventh of this material, giving aproximately 182 pounds in 1 ton.

Any other material may be used in a similar manner. It is not necessary to be exact down to the fraction of a per cent, as fertilizer application is not an exact science, and a slight variation in the calculation will not cause any loss, usually, in the agricultural value of the mixture.—Virginia State Department of Agriculture.

QUANTITIES OF FERTILIZER INGREDIENTS TO BE USED TO GIVE DEFINITE PERCENTAGES IN A TON OF MIXTURE

Ingredient	1 per cent	2 per cent	3 per cent	4 per cent	5 per cent	6 per cent	7 per cent	8 per cent	9 per cent	10 per cent
Carriers of nitrogen (N):	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Nitrate of soda (15 per cent N)	133	266	400	532	666	800	933	1,066	1,200	1,333
Sulphate of ammonia (20 per cent N)	100	200	300	400	500	600	700	800	900	1,000
Cottonseed meal (7 per cent N)	285	571	856	1,142	1,428	1,714	2,000	.....	.....	.....
Dried blood (10 per cent N)	200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000
Phosphoric acid carriers (P_2O_5):										
Acid phosphate (12 per cent P_2O_5)	166	333	500	666	833	1,000	1,166	1,333	1,500	1,666
Acid phosphate (14 per cent P_2O_5)	142	285	428	571	714	856	1,000	1,142	1,286	1,428
Ground bone (23 per cent P_2O_5)	87	174	261	348	435	522	609	696	783	869
Potash carriers (K_2O):										
Potassium chloride (50 per cent)	40	80	120	160	200	240	280	320	360	400
Potassium sulphate (50 per cent)	40	80	120	160	200	240	280	320	360	400
Kelp ash (30 per cent K_2O)	66	133	200	266	333	400	466	533	600	666
Nebraska lakes potash (22 per cent)	90	180	270	360	450	540	630	720	810	900

*Where the combined materials do not total 2,000 pounds a filler may be used to bring the mixture to that weight.
‡Ground bone also carries nitrogen.

How Manure Loses in Value by Weathering

AT CORNELL, 4,000 pounds of excrement consisting of 3,319 pounds of excrement and 681 of straw, were placed in a compact pile out of doors and left exposed from April 25 to September 22. The result was as follows:

	Lbs. April 25	Lbs. Sept. 22	Loss Per Cent
Gross Weight	4,000	1,750	57
Nitrogen	19.6	7.79	60
Phos. acid	14.8	7.79	47
Potash	48	44	8
Value plant food per ton	$2.30	$1.06	

At the same time five tons of cow manure, composed of 9,278 pounds of excrement and 422 pounds of straw, were placed in a compact pile out of doors. The result was as follows:

	Lbs. April 25	Lbs. Sept. 22	Loss Per Cent
Gross weight	10,000	5,125	49
Nitrogen	47	28	41
Phos. acid	32	26	19
Potash	32	26	19
Value of plant food per ton	$2.29	$1.60	

Frequently during the coming twelve months we expect to say, "For fuller information on this subject, see our 1921 "Reference Special." If every reader will preserve this isue, it will help both us and him.

Composition of Fertilizer Materials

MATERIALS	Availability	PER CENT OR POUNDS IN 100 — Nitrogen	Total Phosphoric Acid	Available Phosphoric Acid	Potash
Nitrogenous Fertilizers					
Sodium nitrate	rs	15 to 16			
Ammonium sulphate	rs	19 to 20			
Potassium nitrate	rs	13	.....	.....	44
Calcium cyanamid (lime nitrogen)	rs	10 to 16	.....	.....	.....
Calcium nitrate	rs	12 to 14	.....	.....	.....
Velvet bean meal (pod included)	ss	2.75	.75	0.75	1.8
Cottonseed meal	ms	6 to 6.6	2.5 to 2.8	2.5 to 2.8	1.8
Dried blood (red)	ms	12 to 15			
Dried blood (black)	ms	6 to 12			
Tankage (general range)	ms	4 to 10	2 to 18	2 to 18	.....
Tankage (concentrated)	ms	10 to 12	2 to 4	2 to 4	.....
Fish (dried) scrap	ms	8 to 10	5.5 to 7	5.5 to 7	.....
Fish (acidulted)	ms	5	3	3	.....
Meat (dried) scrap	ms	13 to 14			
Cotton seed	ss	3.12	1.5	1.5	1.5
Castor bean pomace	ms	5 to 6	2 to 2.5	2 to 2.5	1 to 1.25
Wool waste	vss	5 to 6	2 to 4	2 to 4	1 to 3
Leather (ground)	vss	10 to 12			
Leather (acidulated)	vss	7 to 8			
Hoof meal	vss	10 to 15	1.5 to 2	1.5 to 2	
Phosphate Fertilizers					
Acid phosphate	rs	.....	13 to 18	12 to 16	.....
Basic slag phosphate	ms	.....	12 to 20	9 to 15	.....
Soft phosphate	ss	.....	10 to 32	.....	.....
Rock phosphate	vss	.....	27 to 36	.....	.....
Raw bone meal	ss	3 to 4	21 to 25	.....	.....
Steamed bone meal	ms	2 to 3	23 to 25	2.5 to 3.35	.....
Bone black (animal charcoal)	ms	.....	25 to 35	.....	.....
Dissolved bone black	ms	.....	13 to 16	12 to 14	.....
Potassium Fertilizers					
Potassium chloride (muriate)	rs	.....	.....	.....	50 to 53
Potassium sulphate	rs	.....	.....	.....	48 to 51
Kainit	rs	.....	.....	.....	12 to 13
Potassium nitrate	rs	13	.....	.....	44
Potassium carbonate	rs	.....	.....	.....	61 to 64.5
Ashes—Bituminous coal	ms	.....	4 to 5	.....	.4 to .5
Ashes—Wood (leached)	ms	.....	1 to 1.5	.....	1 to 3
Ashes—Wood (unleached)	ms	.....	1 to 2	.....	4 to 6
Manure salt	rs	.....	.....	.....	11

Key: rs—readily soluble; ms—moderately soluble; ss—slowly soluble; vss—very slowly soluble.

Fertilizer Valuation for 1921

THE following valuations are for several fertilizer constituents in unmixed, or raw materials, on the basis of wholesale price at factory, and to these figures would need to be added freight and any merchants' commissions. In this state these valuations are used largely for arriving at deficiencies in fertilizers for reimbursement of the farmer when there are deficiencies.

For ingredients in raw materials:

	Per Lb.	Price One Year Ago
Available phosphoric acid	7c	7c
Potash	12c	15c
Nitrogen	24c	36c
Equivalent to ammonia	20c	30c

The valuations represent near the prices of **phosphoric acid** and **potash** in materials at present, and there is not much variation in the cost of these two constituents in the various materials supplying them.

Ammonia in cottonseed meal at the present price of $38 per ton for 7 per cent meal, making allowance for the values of phosphoric acid and potash in the meal at $5.30 per ton for the two, costs 23.5c per pound; and in nitrate of soda at $60 per ton, 16⅔c per pound; or an average of 20c per pound for ammonia in the two.

Nitrogen, or ammonia, in the mineral ammoniates, nitrate of soda and sulphate of ammonia, cost less at present (which is the usual rule), than in organic materials, like cottonseed meal, fish scrap, dried blood, tankage, and the like.

The fertilizer materials market is so unsettled at present, as is the case in other lines of business, that a careful study and watch should be made of it by farmers in making their purchases for the coming season.

B. W. KILGORE,
Director, North Carolina Experiment Station.

Plants Vary as to Their Food Requirements

TABLE SHOWING DEMANDS FROM LOW TO HIGH FOR EACH CROP

Phosphoric Acid

Low	Medium Low	Medium High	High
Strawberries Watermelons Grasses	Sorghum Cabbage Tomatoes Irish potatoes	Sweet potatoes Tobacco Sugar cane Oats	Cotton Corn Wheat Peanuts Clover Velvet beans Soy beans

Nitrogen

Peanuts Soy beans Velvet beans Cowpeas Clovers Sweet potatoes	Cotton Oats Wheat Root crops	Tobacco Sorghum Strawberries Watermelons Irish potatoes Tomatoes Corn	Grasses Cabbage Sugar cane

Potash

Corn Wheat Oats Grasses	Cotton Soy beans Sorghum Clover	Peanuts Sugar cane Cabbage Velvet beans Cowpeas	Tobacco Irish potatoes Sweet potatoes Watermelons Strawberries Tomatoes

Cottonseed Meal Analyses

TO GET a cottonseed meal with only 36 per cent of protein, there must be mixed with the meats of the seed a considerable portion of the hulls, and this, of course, increases the per cent of fiber.

A good grade of cottonseed meal should have about 41 per cent of protein. This would be what is commonly but erroneously called 8 per cent meal. There is also a medium grade, the so-called 7½ per cent meal, which contains about 38.5 per cent protein. There is also a still lower grade, the so-called 7 per cent meal, which contains 36 per cent protein. Or these three grades of cottonseed meal contain 6.59, 6.18, and 5.76 per cent of nitrogen respectively. In other words, the term "cottonseed meal" means little under existing laws and conditions, all of which is to the great injury of the cotton grower and the manufacturer of cottonseed meal, because it confuses the buyer and tends to discredit the product.

"Nitrogen" content is put on the guarantee, because it is a plant food and cottonseed meal has been largely used as a source of nitrogen in fertilizers. When the protein is given, the nitrogen can be found by dividing the per cent of protein by 6.25. And, of course, when the nitrogen content is given the protein can be found by multiplying the per cent of nitrogen by 6.25.

How Shou'd I Use Lime?

LIME should be applied on top of the plowed ground and harrowed in. It should never be plowed under.

2. On heavy soils it is best to use about two tons of high-grade limestone or marl, or about one ton of burned lime, per acre. On light soils about half this much should be used.

3. It should be applied every four or five years on the average sandy loam or clay loam soils. This is true where summer legumes, such as soy beans, cowpeas, or velvet beans are grown for pasture or for plowing under.

4. As to the application of lime, it may be made at any time when the ground is ready. The most convenient time, and usually the best time, is in the fall and winter when the other farm work is not pressing.

5. The best results are obtained when it is applied before some legume crop as beans, peas or clovers. This application usually considerably increases the growth of the legumes

N. E. WINTERS.

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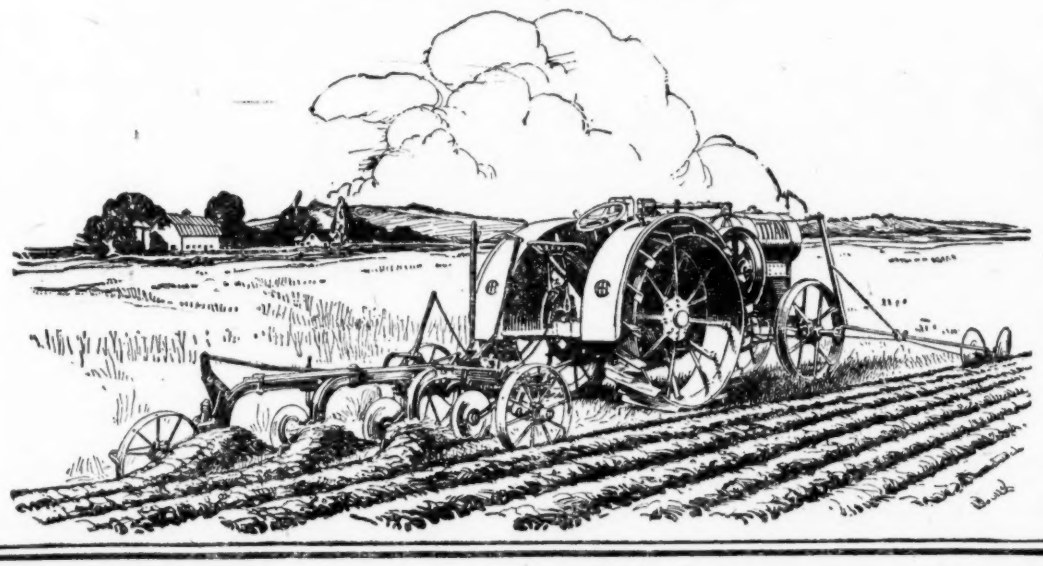

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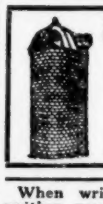

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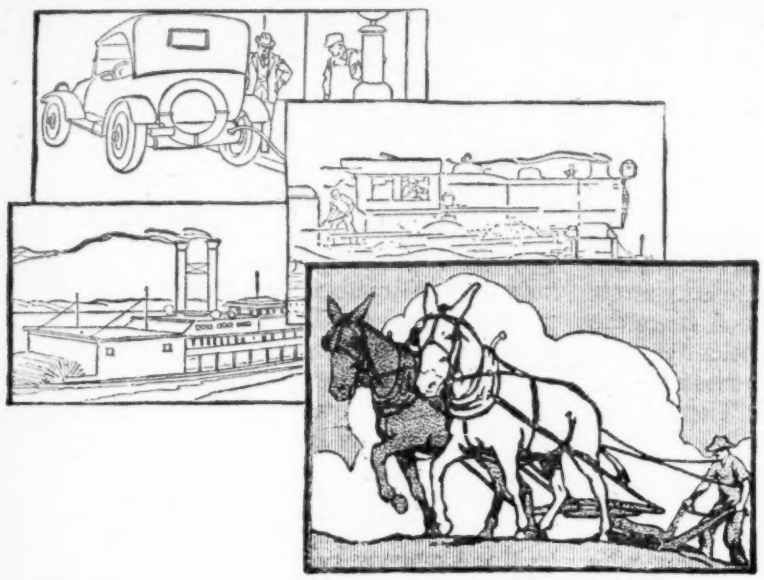

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Feeds and Feeding Facts

Feeding Rations for Livestock

IN MAKING up rations for livestock, the first and most important matter is the animal. What does it like and what will furnish the materials necessary to enable the animal to do what is expected of it? In other words, what feeds will furnish these materials, are they available and what will they cost?

To feed an animal a balanced ration is not sufficient. He must like the feeds and they must not cost too much. Any rations suggested can only be regarded as samples. A dry cow should be fed differently from a cow giving 30 pounds of milk a day. A hard working horse should be fed differently from one standing idle in the stable or lot. A young growing animal should be fed differently from a mature one that is either to be fattened or merely maintains its weight. And these differences apply to the kinds of feeds as well as to the quantity. In short, no one can suggest a suitable ration until he knows the likes and dislikes of the animal, its kind, size and age and what it is expected to do—make growth, put on fat, do hard work, give milk or merely maintain its body weight. He must also know the feeds available and their cost. It is, therefore, plain that little good can be obtained from any reasonable number of rations which might be suggested, for the different feeds, their varying cost and the kind of animals to be fed produce such a large number of different combinations of conditions that there is no hope of any set of rations which might be suggested fitting more than a very few of the cases which actually occur in feeding. But, as many beginners, or those unfamiliar with feeding, are constantly asking for rations, the following are suggested as samples:

For 1,000-pound horse doing hard work, per day:

No 1—12 pounds shelled corn or 15 pounds of ear corn.
12 pounds lespedeza, cowpea, or other legume hay.

No. 2—10 pounds shelled corn or corn meal, or 12½ pounds of ear corn or corn and cob meal.
2 pounds cottonseed meal.
12 pounds hay or corn fodder.

No. 3—5 pounds shelled corn or 6¼ pounds ear corn.
5 pounds oats.
2 pounds cottonseed meal.
12 pounds hay or corn fodder.

No. 4—5 pounds shelled corn or 6¼ pounds ear corn.
6 pounds oats.
1 pound cottonseed meal.
6 pounds legume hay.
6 pounds grass hay or corn fodder.

No. 5—10 pounds shelled corn or 12½ pounds ear corn.
1 pound cottonseed meal.
10 to 12 pounds legume hay.

For 800 to 1,000-pound cow, giving 25 pounds milk a day:

No. 6—35 to 40 pounds silage.
5 pounds legume hay.
5 pounds corn stover or straw.
4 pounds cottonseed meal.
3 pounds corn and cob meal.

Giving 20 to 25 pounds milk a day:

No. 7—30 to 40 pounds silage.
5 pounds legume hay.
5 pounds corn stover or straw.
3 to 4 pounds cottonseed meal.
3 to 4 pounds molasses or 2 to 3 pounds corn.

Giving 15 to 20 pounds milk a day:

No. 8—30 to 40 pounds silage.
5 pounds legume hay.
5 pounds corn stover or straw.
2 to 3 pounds cottonseed meal.

Giving 30 to 40 pounds of milk a day:

No. 9—35 to 45 pounds silage.
10 pounds legume hay.
5 pounds cottonseed meal.
3 to 4 pounds corn and cob meal.
2 to 3 pounds wheat bran.

Beef cattle, 800 to 1,000-pound steers, per day:

No. 10—35 pounds silage.
10 pounds corn stover, straw or cottonseed hulls.
6 to 7 pounds cottonseed meal.

No. 11—30 pounds silage.
10 pounds corn stover, straw or cottonseed hulls.
5 pounds legume hay.
4 to 5 pounds cottonseed meal.
5 pounds corn.

No. 12—30 pounds silage.
15 pounds corn stover, straw or cot-

Digestible Nutrients and Plant Foods in 100 Pounds Feeding Materials

FEED	Digestible Nutrients in 100 pounds: Protein pounds	Carbohydrates pounds	Fat pounds	Plant Feeds in 100 pounds: Nitrogen	Phosphoric acid	Potash
Corn	7.5	67.8	4.6	1.62	.69	.40
Corn and cob meal	6.1	63.7	3.7	1.38	.58	.63
Corn cob (ground)	0.4	47.3	0.2	.32	.07	.66
Corn bran	5.8	56.9	4.6	1.55	.62	.54
Wheat bran	12.5	41.6	3.0	2.56	2.95	1.62
Wheat shorts	13.4	46.2	4.3	2.77	2.11	1.18
Wheat feed (shorts and bran)	12.9	45.1	4.0	2.69	2.19	.83
Rye	9.9	68.4	1.2	1.89	.73	.57
Barley	9.0	66.8	1.6	1.84	.85	.74
Brewers' grains, dried	21.5	30.5	6.1	4.24	.99	.09
Oats	9.7	52.1	3.8	1.99	.81	.56
Oat hulls	2.0	45.2	1.3	.64	.21	.58
Rice (rough)	4.7	64.6	1.7	1.22	.49	.26
Rice hulls	0.3	12.3	0.7	.53	.09	.22
Rice bran, high grade	7.9	38.1	8.8	1.94	2.22	1.20
Rice polish	8.0	57.2	7.5	1.90	3.08	1.17
Kafir grain	9.0	65.0	2.3	1.78	.57	.31
Feterita grain	9.3	66.6	2.5	1.84	.....	.....
Sorghum grain	7.5	66.2	2.6	1.47	.82	.33
Fox tail millet seed	8.6	60.6	3.0	1.94	.46	.37
Cotton seed	13.3	29.6	16.5	3.12	1.50	1.50
Cottonseed meal, 44 per cent	37.0	21.8	8.6	7.06	2.67	1.81
Cottonseed meal, 36 per cent	30.0	27.2	7.0	5.76	2.66	1.80
Linseed meal, new process	31.7	37.9	2.8	5.90	1.77	1.30
Linseed meal, old process	30.2	32.6	6.7	5.42	1.70	1.27
Cowpeas	19.4	54.5	1.1	3.78	1.01	1.49
Peanut, with hull	18.4	15.3	32.6	3.26	.76	.64
Peanut, cake from hulled nuts	42.8	20.4	7.2	7.62	1.16	1.00
Soy beans	30.7	22.8	14.4	5.84	1.37	2.47
Peanut cake, hulls included	20.2	16.0	10.0	4.54	.....	.....
Velvet bean meal	18.1	50.8	5.3	3.33	.....	.....
Velvet bean and pod meal	14.9	51.7	3.8	2.74	.57	2.03
Sunflower seed, with hulls	13.5	38.1	20.3	2.58	1.22	.56
Whole milk	3.3	4.9	4.3	.56	.19	.17
Skim milk (centrifugal)	3.6	4.9	0.2	.61	.22	.17
Buttermilk	3.4	4.9	0.1	.58	.17	4.67
Tankage (55-60 per cent protein)	54.0	.....	12.7	9.30	5.58	.55
Acorn, kernel and shell	2.3	36.2	3.8	.54	.....	.....
Beet pulp, dried	4.6	65.2	0.8	1.42	.24	.32
Molasses (cane)	1.0	58.2	.....	.5	.24	3.16
Artichokes	1.0	14.6	0.1	.32	.14	.49
Carrot	0.9	8.6	0.2	.19	.11	.27
Chufa	0.4	10.2	3.3	.11	.....	.....
Mangel	0.8	6.4	0.1	.22	.04	.22
Potato	1.1	15.8	0.1	.35	.12	.53
Sweet potatoes	0.9	24.2	0.3	.29	.09	.51
Turnips	1.0	6.0	0.2	.22	.13	.29
Corn fodder, medium in water	3.0	47.3	1.5	1.07	.33	.89
Corn stover, medium in water	1.4	31.1	0.6	.62	.29	.83
Corn leaves	3.2	40.1	1.1	1.14	.....	.....
Corn husks	0.6	47.3	0.3	.46	.23	1.02
Sorghum fodder	2.8	44.8	2.0	1.18	.....	.....
Johnson grass hay	2.9	45.0	1.0	1.06	.42	1.13
Millet (German) hay	4.8	49.7	1.7	1.28	.35	1.44
Red top hay	4.6	42.8	1.2	1.18	.44	1.88
Timothy hay	3.0	42.8	1.2	.99	.31	1.36
Oat hay	4.5	38.1	1.7	1.34	.80	3.27
Alfalfa hay	10.6	39.0	0.9	2.38	.54	2.23
Red clover hay	7.6	39.3	1.8	2.05	.39	1.63
Crimson clover hay	9.7	36.8	1.0	2.26	.60	2.24
Cowpea hay	10.8	38.6	1.1	2.5	.55	1.75
Soy bean hay	10.6	40.9	1.2	2.30	.7	1.10
Kudzu vine hay	11.4	39.8	1.2	2.67	.....	.....
Lespedeza hay	8.6	41.1	1.1	1.94	1.03	2.07
Peanut vine, without nuts	6.6	37.0	3.0	1.46	.22	1.39
Velvet bean hay	12.0	40.3	1.4	2.62	.55	2.65
Vetch (hairy) hay	15.7	37.1	1.9	3.18	1.03	2.62
Cottonseed hulls	0.3	33.3	1.5	.74	.36	1.28
Soy bean straw	2.8	38.5	1.0	.9	.12	.89
Cowpea straw	3.4	39.1	0.7	1.09	.....	.....
Corn silage	1.1	15.0	0.7	.34	.16	.44
Sorghum silage	.6	11.6	0.5	.24	.15	.19
Corn and soy bean silage	1.6	13.8	0.8	.40	.16	.45
Soy bean silage	2.6	11.0	0.7	.62	.17	.71

tonseed hulls.
6 to 7 pounds cottonseed meal.

No. 13—35 pounds silage.
10 pounds legume hay.
5 pounds cottonseed meal.
5 pounds molasses.

For wintering dry breeding cows:

No. 14—30 pounds silage.
5 pounds legume hay.
1 to 2 pounds cottonseed meal.

No. 15—25 pounds silage.
10 pounds corn stover, straw or cottonseed hulls.
2 pounds cottonseed meal.

For wintering stockers:

No. 16—25 to 30 pounds silage.
5 to 10 pounds corn stover, or straw.
1 pound cottonseed meal.

No. 17—10 pounds legume hay.
10 pounds corn stover or straw.
1 pound cottonseed meal.

For hogs, brood sows, and young growing pigs:

No. 18—Equal parts of corn and wheat shorts. Add what legume hay they will eat or green pasturage. Give as much as they will eat up promptly two or three times a day.

No. 19—3 parts corn.
1 part soy beans.
Add what legume hay they will take, or green grazing, especially for the sows.

No. 20—Corn, 7 parts.
Tankage, 1 part.
Add legume hay or green grazing, especially for the sows.

For fattening hogs:

No. 21—Corn, 3 parts.
Cottonseed meal, 1 part.
Feed not over 4 weeks, then feed a ration without cottonseed meal for three weeks before returning to the cottonseed meal again.

No. 22—Corn, 8 to 10 parts.
Tankage, 1 part.

No. 23—Fattening hogs should gather from one-half to three-fourths their feed from soy beans, peanuts, sweet potatoes, velvet beans, etc., the balance of the ration being made up of corn or corn and cottonseed meal.

Corn or Oats for Horses?

ONE bushel of corn is equal to about two bushels of oats. If grass hay is fed, then oats alone may be better than corn alone, or two bushels of oats may be worth more than one bushel of corn; but if any legume hay is fed, like alfalfa, lespedeza, clover, soy bean, or cowpea, then one bushel of corn is fully equal to two bushels of oats. Or, if one part of cottonseed meal is fed to five or six parts of corn by weight, then one bushel of corn is fully equal to two bushels of oats.

Monthly Consumption of Feedstuffs

(Showing per cent of yearly consumption for each month)

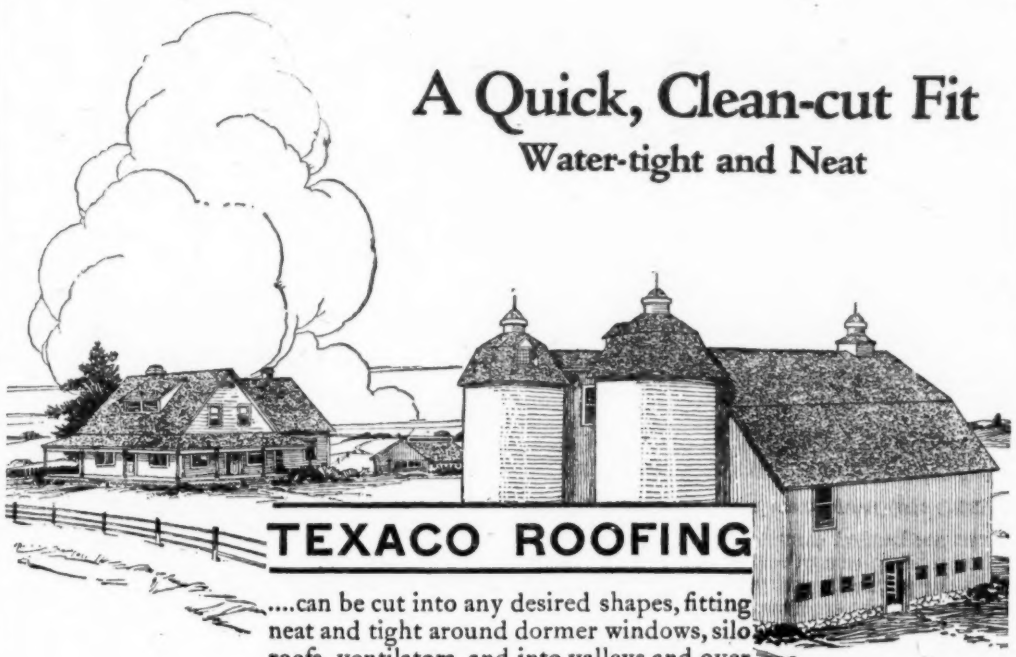
Month	Corn	Oats	Wheat	Hay	Silage	Mill Feed
Year	100.0	100.0	100.0	100.0	100.0	100.0
January	11.0	7.1	10.0	14.1	16.5	10.9
February	10.7	7.3	9.2	14.2	16.8	11.5
March	10.2	8.4	9.2	14.2	16.2	11.5
April	9.0	9.8	8.3	12.0	13.7	10.6
May	6.8	9.3	7.2	6.7	5.3	7.7
June	5.5	8.9	6.5	3.7	1.1	5.8
July	4.8	9.0	5.8	3.3	1.0	4.8
August	4.6	9.3	5.9	3.2	1.0	5.4
September	6.2	9.1	7.3	3.6	1.5	5.7
October	8.8	8.1	8.4	5.2	4.1	6.3
November	10.9	6.9	11.4	8.5	9.5	9.2
December	11.5	6.8	10.3	11.3	13.3	10.6

Cowpeas and Soy Beans

Acreage, Yield, and Prices

State or Section	1920 Acreage for Seed Compared With Normal Per Ct.	1920 Acreage for Seed Compared With 1919 Per Ct.	1920 Yield Per Acre Compared With Normal Per Ct.	1920 Yield Per Acre Compared With 1919 Per Ct.	Average Yield per Acre, 1920—Bu.	Prices per 100 Bu. Offered Growers Nov. 8, 1920. Country Run	Clean
Soy Beans							
Del.	128	126	102	107	940	$3.00	$3.75
Va.	110	112	103	103	960	3.00	3.50
N. C.	97	100	89	90	830	2.60	3.20
S. C.	100	100	90	90	900	.....	.....
Tenn.	98	102	91	108	915	3.10	3.70
Miss.	75	87	90	103	450	2.55	3.35
Ala.	120	104	123	157	420	3.35	3.75
Ga.	100	100	100	100	450	3.15	3.50
Ill.	130	125	100	100	720	.....	.....
Ind.	122	130	106	113	936	.....	.....
Cowpeas							
Del.	77	92	94	100	675	3.00	.....
Va.	59	82	101	103	835	.....	.....
N. C.	91	89	96	109	655	2.95	3.35
S. C.	105	101	112	105	500	3.15	3.80
Tenn.	81	115	93	106	765	3.65	4.35
N. Miss.	74	89	77	103	460	2.10	2.50
SW. Miss.	85	95	105	108	400	3.00	3.35
SE. Miss.	70	83	100	103	480	.....	.....
N. Ala.	91	88	88	99	400	2.40	3.30
SW. Ala.	89	86	96	96	400	3.15	.....
SE. Ala.	99	99	100	100	660	2.70	3.25
N. Ga.	98	100	112	117	550	2.50	3.35
SW. Ga.	101	103	95	106	370	2.70	3.40
SE. Ga.	88	80	100	100	240	3.30	.....
Ill.	116	145	142	150	600	2.70	3.25
Ind.	168	110	100	108	345	.....	3.10
Mo.	99	174	106	120	580	2.40	3.15

"I have been a subscriber now for nearly six months and think I can hardly do without your valuable paper."—Wyatt Norwood, Macune, Texas.



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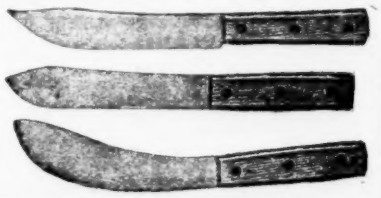
GET READY FOR HOG KILLING

Here are Three Knives You Need!



This set consists of butcher or bread knife, skinning or slicing knife and a sticking or hand knife. Blades are six inches in length.

These knives are made of high grade crucible steel, highly finished, uniformly tempered, carefully ground and sharpened, beechwood handles with three brass saw rivets.

Earn a set of these three Knives by getting up a club of (2) two yearly subscriptions to The Progressive Farmer. Sent prepaid.

Or send $1.75 for a one year subscription to The Progressive Farmer (new or renewal) and we will send you the Knives.

The Progressive Farmer

Protected from Winter Blasts

With an IDEAL-Arcola Heating Outfit the farm home becomes the equal of the finest city mansion

All rooms are heated from one fire and with great fuel saving—outlasts the building—no other feature or equipment of a home will do so much for yourself and your family. An IDEAL-Arcola is an investment and not an expense.

IDEAL-Arcola Heating Outfits

Any Dealer will furnish in sizes to suit rooms and climatic conditions.

For Soft Coal	No. 1-B	Size	IDEAL-Arcola	with	100	sq. ft.	of	Radiation	$142
	" 2-B	"	"	"	150	"	"		176
	" 3-B	"	"	"	200	"	"		213
	" 4-B	"	"	"	250	"	"		251
	" 5-B	"	"	"	300	"	"		290
For Hard Coal	No. 1-A	Size	IDEAL-Arcola	with	135	sq. ft.	of	Radiation	$163
	" 2-A	"	"	"	200	"	"		206
	" 3-A	"	"	"	265	"	"		251
	" 4-A	"	"	"	330	"	"		299
	" 5-A	"	"	"	400	"	"		349

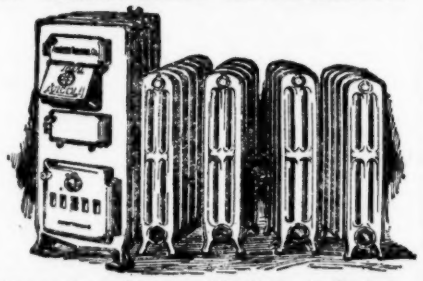
Prices include Expansion Tank and Drain Valve. Prices do not include labor, pipe and fittings used in installation and which are supplied by the local dealer at extra charge. Radiation is of regular 38-in. height 3-column AMERICAN Peerless, in sizes as needed to suit your rooms. Outfits shipped complete f. o. b. our nearest warehouse, at Boston, Providence, Worcester, Springfield (Mass.), Albany, New York, Philadelphia, Harrisburg, Pittsburgh, Baltimore, Washington, Richmond, Buffalo, Cincinnati, Indianapolis, Birmingham, Detroit, Chicago, Milwaukee, Minneapolis, St. Paul, Des Moines, or St. Louis.

Shipped complete for immediate installation

The beauty of the IDEAL-Arcola method is that no cellar is needed. Everything is on one floor. The Arcola is placed in any room that has a chimney connection. No running to cellar. Same water is used over and over again for years. No fire risk.

Buy now at present attractive prices for outfits complete!

IDEAL-Arcola outfit consists of the boiler and radiators to heat various size houses. Write us your requirements! Unlike stoves, there are no coal-gas leaks into the living-rooms. The IDEAL-Arcola delivers the soft, radiant warmth of hot water—not the dry, burnt-out atmosphere of stove heating. There is no fire risk to building—no danger to children—fire lasts for hours! The Arcola burns hard or soft coal.



The outfit consists of an IDEAL-Arcola Radiator-Boiler and 4, 5, or 6 AMERICAN Radiators and Special Expansion Tank—everything except labor, pipe and fittings, which any local dealer will supply. See table above for various sizes and prices of outfits.

Catalog showing open views of houses, with the IDEAL-Arcola Boiler in position will be mailed (free). Write today

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AMERICAN RADIATOR COMPANY

Write to Department F-23 Chicago.

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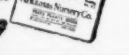

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the south's newest great railway.

Vegetables, oranges and grapefruit net $500 to $2,000 per acre. Healthy, mild climate. Good schools, churches, roads. For information write

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Suggestions for Pastures and Fences

Creosoting Fence Posts: How It Pays

UNLESS there is an abundance of wood on the farm and the farmer has an abundance of time and labor, he cannot afford to use short-lived wooden fence posts unless they are treated.

1. **Coal-tar creosote** is the material which gives the best results when the cost of labor and the additional life are concerned.

2. **Experiments show that** it is best to use peeled round posts from three to four inches in top-diameter and just long enough to allow a few inches above the top wire. Round posts are more satisfactory than split timber because they have a uniform absorbing surface of sapwood. Small, short posts reduce the cost for creosote and for labor in handling, last practically as long as larger posts, and afford ample strength for the fence line.

The following table from the Iowa Experiment Station gives the average life or years of the posts made from various woods, both treated and untreated:—

Kind of post	Untreated Years	Treated Years
Ash	6	25
Aspen	3	27
Basswood	4	27
Cottonwood	3	27
Hard Maple	4	26
Honey Locust	12	30
Red Elm	7	25
Red Oak	6	20
Soft Maple	4	27
White Cedar	14	30
White Elm	4	25
Willow	4	27

Following is the estimated average life of untreated and treated posts as shown in Louisiana tests:

Kind of wood	Estimated Untreated Years	Estimated Treated Years
Osage Orange (bois d'arc)	over 15	
Black locust	10 to 15	
Cypress (heart)	10 to 15	
Mulberry	8 to 10	
Catalpa	6 to 10	
Southern white cedar	5 to 7	20 or more
Cypress (sap)	5 to 7	20 or more
White oak (round)	5 to 7	15 to 20
Longleaf pine (heart)	5 to 7	
Red Oak	2 to 4	15 to 20
Sap pine (longleaf, shortleaf and loblolly)	2 to 4	15 to 20
Sweet gum	1 to 2	15 to 20
Black gum	1 to 2	15 to 20
Bay	1 to 2	6 to 10

3. **It is not always** necessary or advisable to treat the above-ground portion of the posts. Some authorities recommend the hot and cold treatment for the entire post; other authorities advise the hot and cold treatment for the lower end extending about six inches above the ground and the cold creosote treatment alone for the above-ground portion of the post.

4. **The outfit for creosoting posts** consists of a metal tank large enough to hold a number of posts under which a fire may be built to heat the creosote to about 220 Fahrenheit. The peeled, well seasoned posts should remain in the hot solution two or three hours after which they should be put into cold creosote for an hour or two. The cold creosote may be kept in an iron or wooden vessel. A gasoline drum with one head chiseled out is a good tank for the hot treatment and an oak barrel is a good vessel for the cold creosote.

5. **Prices of coal-tar creosote** range from 20 cents to 35 cents a gallon in barrel lots. A gallon of creosote is sufficient to treat three posts from three to four inches at the top.

6. **Two or more farmers** should jointly own and use the treatment equipment. Cooperation will justify the use of a rather expensive outfit.

7. **Farmers unable to use** the hot and cold treatment should use the cold treatment only. Just painting the lower end of the post with a brush adds a great deal to the life of short lived posts.

8. **The tops of all posts** should be pointed or cut on a slant to keep the water from collecting on top. It is also advisable to paint the top of the post if it is not creosoted.

G. H. ALFORD.

Grass Mixtures That Are Good

FOR average lands of the South, possibly three to six pounds of Bermuda grass seed sowed on a well-prepared seed bed from April to July, or Bermuda sod scattered and covered at any season of the year when there is moisture, one to two bushels of bur clover seed in the burs and three to four pounds of white clover per acre sowed in the early fall and one bushel of lespedeza seed sowed in February or March will give the most satisfactory results. When Bermuda is objectionable a good permanent pasture is more difficult to maintain.

For damp lands the following may be used:
Red top ..... 8 pounds
Alsike clover ..... 6 pounds
White clover ..... 3 pounds
Lespedeza ..... 15 to 25 pounds

Silos: Each Type Has Its Good Points

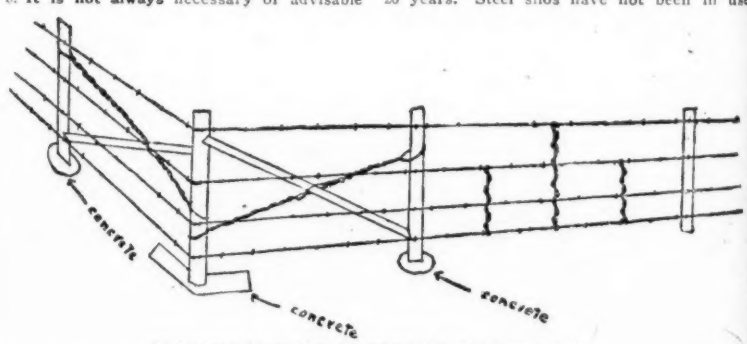
ANY container that is air-tight and having walls that are smooth and impervious to both air and water, will keep silage in good condition.

The cost, durability, ease of construction and upkeep are factors that must be considered. The cost varies considerably, depending upon the material used. The cheapest silo is the common pine stave. This silo in size 14x30, 92-tons capacity, can be purchased for about $350. The concrete, same size, will cost about $400; the Modified Wisconsin cypress, $500; the patented cypress, $550; hollow clay block, $600; steel, $700. The cost of construction will vary from $300 to $300, depending largely on labor conditions.

As to durability, silos built of cement and concrete and clay products, will be the more durable. When properly built these should last almost a lifetime. Pine silos properly built and cared for would do well to last 10 years in this country. Cypress silos under same conditions should last at least 20 years. Steel silos have not been in use so long as other types, but when properly cared for should prove very permanent.

In case of construction, the patent steel, and the monolithic concrete possibly rank above the wooden types, with the possible exception of some of the patented silos made of cypress.

In upkeep the concrete and hollow block silos rank first. Steel silos, however, will rank closely in this respect. These silos will only require a dressing of some material to prevent a losing of moisture through the walls in the case of concrete and hollow block silos, and to prevent a chemical action between the acid of the silage and the metal in the case of steel silos. Tar preparations are good for the former and an asphaltum paint for the latter. Wooden silos will require painting, and much attention to anchoring and to loosening and tightening of hoops, excepting where wooden hoops are used.—W. H. Block, Florida Station.



SHOWING METHOD OF SETTING CORNER POST

Don't throw away last year's "Reference Special" just because you have this year's. Much valuable information in our 1920 issue is not repeated this time.

EXPERIENCE LETTERS AND PHOTOGRAPHS WANTED FROM FARMERS AND FARM WOMEN

FOR the best letter received on each subject we will award a prize of $5, for the second best letter $3, and we will pay regular space rates for every other letter we print. Prize letters not to exceed 300 words.

"Experiences in Marketing Vegetable and Truck Crops."—Mail letters by January 5.
"Experiences in Selling Tobacco."—Mail letters by January 12.
"Experiences in Selling Corn."—Mail letters by January 19.

SUBJECTS FOR FARM MEN AND WOMEN

"Some Mistakes I Have Made."—We offer $1 for each short letter we print. Must be written on a single sheet. When preferred name and address will be withheld.

SUBJECTS FOR FARM WOMEN

"Experiences in Making Pin Money or Extra Money From Vegetables, Fruits, Flowers, Poultry, Canned Goods, and in Other Ways."

PHOTOGRAPHS WANTED

We pay for all good farm photographs we can use. Mail photographs any time.

How to Get Good Pastures in the South

PUT up a fence that will turn any kind of livestock. A 32 to 44-inch medium to heavy woven wire with two or three strands of barbed wire on top will be found satisfactory.

2. Remove plants that interfere with the growth of pasture plants, and obstacles of any kind that prevent the use of the mower.

Amount of Pasture Needed Per Animal.

PROVIDE two or three acres for every 1000-pound cow or horse or equivalent animal units, and then add 25 per cent more land to provide for dry weather and other unfavorable conditions.

4. As a general rule, the only fertilizers that may be profitably applied to pastures are phosphorus and lime. In many cases it will pay to apply two or more tons of ground limestone to the acre of plowed ground. After mixing the lime with top soil by disking and harrowing, acid phosphate or basic slag phosphate may be applied at the rate of 300 to 500 pounds per acre. Legumes should be used, and these will gather nitrogen from the air. Where land is very poor it may be necessary to use a small amount of nitrogen to give the legumes a start, or when possible apply stable manure.

5. Sow Bermuda, where it does well and is desired, and lespedeza in almost any part of the South. To these warm weather plants add such clovers as do well in the section for early grazing. For the lower South bur clover has been found best for this purpose although white and hop clovers also do well on many soils in the section. In the upper South white and hop clovers will be found more dependable than bur clover although soils will be found that grow bur clover satisfactorily. Carpet grass should be substituted for Bermuda on the sandy soils of the Lower Gulf Coast where Bermuda often does not do well. Paspalum dilatatum or Dallas grass is a splendid grass for late fall grazing.

Pasture Mixtures

SOME suggested pasture mixtures with the rate of seeding are as follows:

Bermuda seed—6 pounds per acre or a piece of sod per every 1 to 3 square feet.

Lespedeza—15 to 20 pounds.

White clover—3 pounds.

Bur clover—2 to 3 bushels.

Mixture for moist land where Bermuda and lespedeza do well.

Bermuda—6 pounds seed or pieces of sod.

Lespedeza—15 to 20 pounds.

Alsike clover—6 to 8 pounds.

Red top—10 pounds.

Mixture for moist land in the upper South where Bermuda and lespedeza do not grow well:

Timothy, 12 pounds; Red top, 10 pounds; Alsike clover, 8 pounds.

For well-drained uplands where Bermuda and lespedeza are not adapted:

Orchard grass, 10 pounds; White clover, 4 pounds; Oats grass, 6 pounds; Meadow fescue, 8 pounds; Red clover, 6 pounds. (Where land is rich and has good lime content.)

When and How to Sow.

BERMUDA seed may be sowed in May or June but the use of sod is more reliable and it may be set out at any time of year provided moisture conditions are favorable and the sod is covered during cold weather. Bermuda seed will germinate satisfactorily only on well-prepared seed beds, and in this connection, it should be stated that a well-pulverized but firm seed bed will be needed for most pasture plant seed. This is especially true with small seed. Light covering is essential in sowing small seed.

Lespedeza is best sowed in late winter and early spring, while most clovers and pasture grasses do best when sowed early enough in the fall to allow a moderate growth before cold weather.

6. Do not allow the land to wash or gully. Pasture crops cannot establish themselves on moving land.

7. Do not graze the pasture too closely or allow animals on the field during wet weather. It is just as possible to drive out the pasture plants by too heavy grazing as it is to exterminate weeds in the pasture by frequent mowing. The plants should be allowed to become well established before they are grazed very much. Moderately close grazing after the plants have become well established is all right.

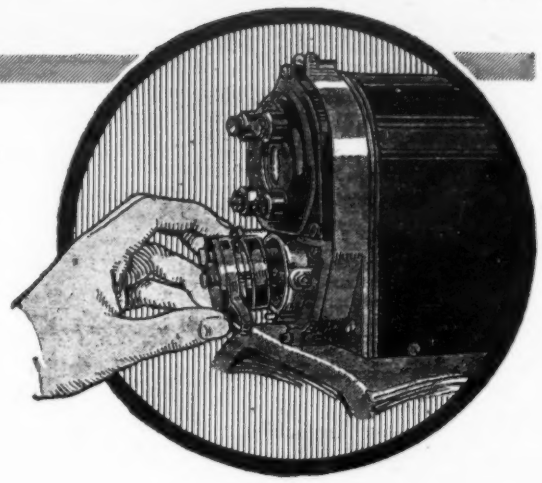
8. Run the mower over the field often enough during July and August to prevent the non-pasture plants from making seed.

9. Bermuda pastures, owing to the growing habit of the grass, become sod bound after a few years and produce a reduced amount of grazing. To prevent or improve this condition the pasture should be thoroughly disked or plowed every year or so. This cultivation should be given at a time when moisture is plentiful.

Don't throw away last year's "Reference Special" just because you have this year's. Much valuable information in our 1920 issue is not repeated this time.

The K-W Removable Timer

What It Means to Your Tractor



The spark which makes your tractor go depends on two platinum "points" in the "timer" or "circuit breaker" of the magneto. These points close and open for every spark—hundreds of times per minute.

Every ignition system contains a circuit breaker. Have you ever examined your circuit breaker, or because of its location are you content to hope it will never cause trouble?

Good operation of an ignition system demands that points be kept free from oil and dirt, dressed to keep the two surfaces flat and adjusted to open 1-64 of an inch.

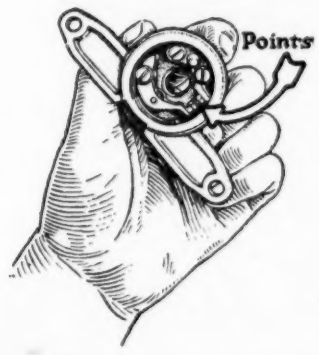
To neglect these points means certain trouble—to care for them takes only a few minutes a year if the magneto is properly constructed.

On the K-W Magneto this entire mechanism (—the complete circuit breaker, platinum points and all) can be removed from the magneto as one unit in half a minute's time and held in the hand while inspecting, cleaning or adjusting.

This is one of the advantages of K-W Magneto design. It is made easy to care for and therefore gives better service.

Carry an Extra Timer

Many farmers know that an hour's tractor time lost often costs more than several magnetos. They equip their tractors with the reliable K-W Magnetos and carry an extra timer or circuit breaker which can be slipped in place instantly when the points need replacing. The old points can be replaced at leisure. Thus constant operation is assured.



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WITTE 4-Cycle Engine

Costs only 25 to 50 cents a day to operate. Double the power needed for sawing logs or trees. Perfectly balanced rig. Can be used for belt work.

New WITTE Tree Saw

At low cost additional you can now get the new WITTE Tree Saw Equipment—changes Log Saw to Tree Saw. Saws down trees any size.

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Quick Change From Log to Tree Saw

$125.00 NOW

For this Complete Log Saw

F. O. B. Kansas City, Mo. From Pittsburgh, Pa., add $6.50

Don't buy any Log Saw, Tree Saw or Buzz Saw Outfit until you have seen the new WITTE. Lowest priced Guaranteed rig on the market. Cuts much faster than former rigs. On tests we cut 2-ft. log in 90 seconds. Tree saw cuts 'em close to the ground. Goes anywhere. We are making a special advertising price NOW—So write at once for complete description of this wonderful outfit FREE. BRANCH BUZZ SAW $23.50.

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Sell Your Hides Direct to Our Tannery.

Green Salted Hides ..... 10 cents per pound
Dry Flint Hides ..... 20 cents per pound
Payable in Oak Harness Leather at 60 cents lb., or Oak Sole Leather at 75 cents per lb.

BECOME OUR AGENT in your locality and gather up the Hides and sell our Leather.

Send for Prices on Shoes, Leggins, Harness, etc.
Ref.: Elk Nat'l Bank, or Dun & Bradstreet.

LINCOLN LEATHER CO., Fayetteville, Tenn.

PEACH & APPLE TREES DIRECT TO PLANTERS NO AGENTS

Small or Large Lots by Express, Freight or Parcel Post. Pear, Plum, Cherry, Berries, Grapes, Nuts. Shade and Ornamental Trees, Vines and Shrubs. Catalog FREE.

TENN. NURSERY CO., Cleveland, Tenn.

SPARE TIME or CASH MONEY

Which Would You Prefer?

You already have the spare time, but you can swap it for ready cash, as The Progressive Farmer Agent for your community. Hundreds of subscriptions are expiring in every farming community. Your spare time is worth several hundred dollars to us during the next few months. You have the spare time—we will pay you well for it. Let's swap.

WRITE TODAY

for full particulars of our money-making offer to agents, and get started in your community before someone else does.

Address nearest office.

The Progressive Farmer

Raleigh, Atlanta, Birmingham, Memphis, Dallas.

CASH For Your Spare Time

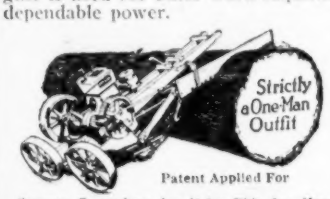
Is what we offer you in the Agency for *The Progressive Farmer* in your community.

You do not need experience to begin with, as we will help. All you have to do is to make the start for yourself, and we will help make money during your spare time.

When writing advertisers, say: "I am writing you as an advertiser in The Progressive Farmer, which guarantees the reliability of all advertising it carries."

EASY NOW TO SAW LOGS AND CUT DOWN TREES

Only one man, or even a boy, with the improved Ottawa Engine Log Saw can easily cut 25 to 40 cords a day, and at a cost of less than 2c per cord. This machine, which outdoes all others, has a heavy, cross-cut saw driven by a powerful especially designed 4-cycle gasoline engine. It's a fast money-maker for those using it, and now with coal at high prices and wood in great demand, users are making splendid profit. It does more than 10 men could do, either cutting down trees or sawing logs and branches. When not sawing, the engine is used for other work requiring dependable power.



Patent Applied For

Farmers Everywhere Are Using This One-Man Power Log Saw. It's a Fast Worker and a Splendid Profit Maker.

The machine is mounted on truck wheels to make it easy to move to the trees or logs, and from cut to cut on a log *without stopping the engine*. This is a patented feature. A friction clutch starts and stops saw without stopping the engine. An automatic clutch stops the saw in case of undue resistance.

The Ottowa is also fitted for sawing down trees. It cuts level with the ground, leaving no stumps sticking up. Two men can easily fall 40 to 50 trees a day in ordinary timber. A branch saw attachment cuts up branches and poles.

The outfit is compact, simple, easy to handle and durable against a lifetime of hard wear. Guaranteed for reliable operation in the hands of every one who has trees to cut down and logs to saw up.

Full information, low factory price, cash or easy payments, and 30 days' trial offer can be had simply by addressing the Ottawa Mfg. Co., 1848 Wood St., Ottawa, Kansas.

Get This FREE
Land Clearing Book

Most authentic land clearing book ever published. Tells you also about the new miracle-working Hercules one-man stump puller. At last a one-man stump puller which does work almost beyond belief. Send for the free book.

30 DAYS FREE TRIAL

One Man Pulls Biggest Stumps

If you have any stumps at all you should get this great land clearing book and find out about the perfected Hercules. Positively pulls big, tough, tap-rooted, rock-set stumps with only one man.

Write Today Send name and address and we will mail free the greatest land clearing book ever published. Send postcard for this free book and special offer today.

Hercules Mfg. Co.
2951 29th Street
Centerville, Iowa

Hercules
Horse Power
Hand Stump Puller

BOSTROM IMPROVED FARM LEVEL

Shipping weight 15 lbs. **Price $22.50**

Has TELESCOPE with magnifying glasses which enable you to see cross on Target quarter of a mile. Pays for itself on the first job of

TERRACING, DITCHING, TILE DRAINING, IRRIGATING, etc.

Best investment any land owner ever made with Twenty-Two Dollars and Fifty Cents. Simple accurate, durable and complete with full instructions. Used and endorsed by Agricultural Schools, County Demonstration Agents, and farmers from Atlantic to Pacific, and you will endorse it too after using it—if not your money back.

Write for description of Level and TELESCOPE details of money back guarantee; or better still order NOW before the heavy rains set in.

BOSTROM-BRADY MANUFACTURING CO.
58 Stonewall Street, ATLANTA, GA.

What the Farmer Wants to Know

Parcel Post Rates

PARCEL post service is quick, safe and economical. Packages weighing 70 pounds or less can be sent by parcel post in first three zones, and parcels weighing 50 pounds are delivered all over the country. Parcels to be sent by mail must not exceed 84 inches all around. In other words, the distance from one end to the other, added to the number of inches around the bulkiest part of the package, must not be more than 7 feet.

If you do not know in what zone your customer lives, your postmaster will tell you, or you can have him get you a parcel post map, price 20 cents.

If your package weighs 4 ounces or less the rate is 1 cent an ounce to any part of the United States. Books that weigh 8 ounces or less can be shipped at 1 cent for 2 ounces to any part of the country. Books weighing over 8 ounces go at parcel post rates.

Some specially marked articles in the drug line, explosives, or poisonous or inflammable articles, cannot be sent through the mails.

Parcel post shipments cannot be sent charges collect.

The following table shows the rate on all parcel post shipments from one pound up, where they do not go over 300 miles. For rates on shipments over 300 miles, consult your postmaster.

Pounds	Local Parcel Post Rate	Zone 1 50 Miles		Zone 2 50-150		Zone 3 150-300	
		Parcel Post	Express	Parcel Post	Express	Parcel Post	Express
1	$0.05	$0.05	$0.31	$0.05	$0.31	$0.06	$0.31
2	.06	.06	.31	.06	.32	.08	.32
3	.06	.07	.31	.07	.32	.10	.33
4	.07	.08	.32	.08	.33	.12	.35
5	.07	.09	.32	.09	.34	.14	.36
6	.08	.10	.33	.10	.35	.16	.37
7	.08	.11	.33	.11	.36	.18	.38
8	.09	.12	.34	.12	.36	.20	.39
9	.09	.13	.34	.13	.37	.22	.40
10	.10	.14	.35	.14	.38	.24	.42
11	.10	.15	.35	.15	.39	.28	.45
12	.11	.16	.36	.16	.40	.30	.46
13	.11	.17	.36	.17	.40	.32	.47
14	.12	.18	.37	.18	.42	.34	.48
15	.12	.19	.37	.19	.44	.36	.49
16	.13	.20	.38	.20	.45	.38	.50
17	.13	.21	.38	.21	.46	.40	.52
18	.14	.22	.39	.22	.46	.42	.54
19	.14	.23	.39	.23	.47	.44	.55
20	.15	.24	.40	.24	.48	.46	.56
21	.15	.25	.40	.25	.49	.48	.57
22	.16	.28	.43	.28	.50	.50	.58
23	.16	.29	.43	.29	.50	.52	.59
24	.17	.30	.44	.30	.51	.55	.61
25	.17	.31	.44	.31	.52	.57	.62
26	.18	.32	.45	.32	.54	.59	.63
27	.18	.33	.45	.33	.55	.61	.66
28	.19	.34	.46	.34	.55	.63	.67
29	.19	.35	.46	.35	.56	.65	.68
30	.20	.36	.47	.36	.57	.67	.69
31	.20	.37	.47	.37	.58	.69	.71
32	.21	.38	.48	.38	.59	.71	.72
33	.21	.39	.48	.39	.59	.73	.73
34	.22	.40	.49	.40	.61	.75	.74
35	.23	.41	.49	.41	.62	.77	.75
36	.23	.42	.50	.42	.63		
37	.23	.43	.50	.43	.63		
38	.24	.44	.51	.44	.66		
39	.24	.45	.51	.45	.66		
40	.25	.46	.52	.46	.67		
41	.25	.47	.52	.47	.68		
42	.28	.48	.54	.48	.69		
43	.28	.49	.54	.49	.69		
44	.29	.50	.55	.50	.70		
45	.29	.51	.55	.51	.71		
46	.30	.53	.56	.52	.72		
47	.30	.54	.56	.54	.73		
48	.31	.55	.57	.55	.73		
49	.31	.56	.57	.56	.74		
50	.32	.57	.58	.57	.75		
51	.32	.58	.58	.58	.77		
52	.33	.59	.59	.59	.78		
53	.33	.60	.59	.60	.78		
54	.34	.61	.60	.61	.79		
55	.34	.62	.60	.62	.80		
56	.35	.63	.61	.63	.81		
57	.35	.64	.61	.64	.82		
58	.36	.65	.62	.65	.82		
59	.36	.66	.62	.66	.83		
60	.37	.67	.63	.67	.84		
61	.37	.68	.63	.68	.86		
62	.38	.69	.66	.69	.87		
63	.38	.70	.66	.70	.87		
64	.39	.71	.67	.71	.89		
65	.39	.72	.67	.72	.90		
66	.40	.73	.68	.73	.91		
67	.40	.74	.68	.74	.92		
68	.41	.75	.69	.75	.92		
69	.41	.77	.69	.76	.93		
70	.42	.78	.70	.77	.94		

Virginia Agricultural Leaders

STATE Agricultural Department—Comsioner, G. W. Koiner, Richmond; Director of Markets, J. H. Meek, Richmond; State Dairy and Food Commissioner, B. L. Purcell.

State Board of Agriculture and and Immigration—(Named by Congressional Districts): First, A. J. McMath, Onley; Second, Frank Lindsay, Portsmouth; Third, J. S. Taylor, Beach; Fourth, J. F. Kolar, Disputanta; Fifth, Berkley D. Adams, Red Oak; Sixth, R. H. Angel, Roanoke; Seventh, T. W. Allen, Mt. Jackson; Eighth, Robert H. Gray, Leesburg; Ninth, R. W. Dickinson, Castlewood; Tenth, R. R. Heydenreich, Staunton; Julian Burruss, president, V. P. I., ex-officio, Blacksburg; Lawrence T. Berry, secretary, Richmond.

Extension Service Staff—Julian A. Burruss, president, V. P. I.; John R. Hutcheson, director; W. P. Moore, assistant director; Chas. G. Burr, state boys' club agent; Mrs. M. M. Davis, state agent; Frank A. Buchanan, dairy husmandman; J. C. Hart, agronomist; Miss Bessie Hodsden, assistant state agent; Miss Hallie L. Hughes, state girls' club agent; J. P. Keen, animal husbandman; G. S. Ralston, horticulturist; W. D. Saunders, dairy specialist; Chas. E. Seitz, agricultural engineer; R. C. Thomas, assistant plant pathologist; A. F. Treakle, poultry husbandman; E. R. Price, editor.

All above are at Blacksburg, Va.

District Agents—J. G. Bruce, Culpeper; F. S. Farrar, Burkeville; J. H. Quisenberry, Fredericks Hall; W. C. Shackleford, Proffit; Miss Elizabeth Cook, district agent at large, Blacksburg; Miss Mary Helen Ferris, 301 E. Franklin St., Richmond; Miss Eldona Oliver, 209 Lynch Bldg., Lnchburg.

State Experiment Station Staff—President, J. A. Burruss; director, A. W. Drinkard, Jr.; horticulturist, H. L. Price; chemist, W. B. Ellett; entomologist, W. J. Schoene; agronomist, T. B. Hutcheson; plant pathologist and bacteriologist, F. D. Fromme; field horticulturist, G. S. Ralston; animal husbandman, R. E. Hunt; dairy husbandman, C. W. Holdaway.

Supervisors, County Experiment Stations—State supervisor, T. B. Hutcheson; W. W. Green, Bowling Green; B. G. Anderson, Appomattox; R. P. Cocke, Lightfoot; E. R. Hodgson, Staunton; D. J. Berger, Chatham; A. N. Hodgson, Martinsville; M. O. Wilson, Charlotte C. H.; E. T. Batten, Holland.

Eastern Shore of Virginia Produce Exchange—Secretary, A. J. McMath, Onley.

Holstein-Friesian Association of Virginia—President, J. A. Turner, Hollins; secretary, R. V. Martindale, Sweet Briar.

Virginia State Farmers' Union—President, A. B. Thornhill, Richmond; vice-president, O. A. Thomas; secretary-treasurer, Geo. H. Bowles, Lynchburg; executive committee: Geo. A. Lambert, C. W. Brown, M. E. Padgett, W. M. Cease, E. M. Newton, H. H. Carroll.

State Farmers' Institute—Joseph A. Turner, president, Hollins; B. Morgan Shepherd, secretary-treasurer, Ashland.

State Horticultural Society—B. F. Moomaw, president, Cloverdale; W. P. Massey, secretary, Winchester.

Virginia Tobacco Growers' Association—President, J. H. Warren, Route 2, Danville; vice-president, R. L. Coleman, Java; secretary-treasurer, W. R. Ogg, Route 2, Danville; executive committee: J. H. Neal, Ringgold; J. H. Young, Clarksville; H. T. Jones, Burkeville; G. H. Mitchell, Boxwood; Wm. Lea.

State Farm Bureau Federation—President, E. H. Sanders, Max Meadows; secretary, E. K. Coyner, Marion.

State Dairymen's Association—President, Frank C. Baldwin, Fredericksburg, Va.; vice-president, Frank S. Walker, Woodberry Forest, Va.; secretary-treasurer, Frank A. Buchanan, Blacksburg; directors: R. V. Martindale, Sweet Briar; J. L. Miller, Richmond; Peyton Rowe, Richmond; Joe A. Turner, Hollins; Frank S. Walker, Woodberry Forest; Frank C. Baldwin, Fredericksburg; J. C. Courtner, Jetersville; Fred Driver, Waynesboro; A. F. Howard, Charlottesville; R. E. Hunt, Blacksburg.

State Superintendent of Education—Harris Hart, Richmond.

Traveling Libraries and Free Book Loans in Virginia

BOOKS from the main collection of the Virginia State Library, Richmond, Va., may be borrowed by any responsible person in the state, and communities and schools may borrow collections of books from the Traveling Library Department of the State Library.

1. **Books sent to individuals** from the main library are allowed to be kept out for only two weeks, and then on request to be kept out for two additional weeks, provided no one has called for them at the State Library at the end of the first two weeks.

2. **Teachers may borrow** books and pamphlets to be used in debate by their pupils, and books for any other use. The only expense to which borrowers are put is the cost of postage.

3. **In the Traveling Library Department** there are about 12,000 books, made up into collections of from 25 to 50 books. Some collections are especially suitable for community use, others for school use, others for study clubs. These collections may be kept out for six months. Any company or group of persons in the state consisting of as many as five may form a local library association and borrow one of these collections, paying the cost of carriage both ways.

Address all requests to Virginia State Library, Richmond, Va.

Traveling Libraries, Etc., for North Carolina Readers

THE North Carolina State Library Commission, Raleigh, N. C., offers to lend collections of books, or individual books, to North Carolina farmers, their families, schools, or communities, as follows:

I. A Traveling Library

EACH traveling library contains 40 volumes, of which one-third are children's books. The remainder includes good stories and popular non-fiction. The traveling libraries for schools are made up entirely of children's books arranged according to grade.

People in any North Carolina community may get a traveling library, keep it three months, and then get another. The only expense to the community is the cost of transportation, and if that exceeds $1, the Library Commission pays the excess.

II. You Can Also Borrow Books on Special Subjects

BOOKS on many different subjects are also lent to residents of North Carolina by the Library Commission. The collection of books on agriculture is very complete and includes material on subjects most useful to farmers. Write the commission for books on **any subject that interests you.**

The only cost to the borrower for this service is that of the postage which can be refunded to the Library Commission when the books are returned.

III. Free Debate Libraries and Special Help for Schools

DEBATE libraries are lent to schools and debating societies. Material on 80 debate subjects is available. Libraries may be kept three weeks. No charge is made for the loan of libraries, but borrowers pay the postage both from and to Raleigh.

The Library Commission has also special collections of declamations, recitations, school plays, and material for the celebration of holidays. Books on educational topics can be borrowed by teachers and parents.

Address all applications for books to North Carolina State Library Commission, Raleigh, N. C.

How to Get a Traveling Library

NO MATTER in what Southern state you live, you can now get help in starting a school library, and if your school hasn't yet started one, it is high time to see your teacher, your school committeemen and your county superintendent and get the movement going.

Virginia, North Carolina, Tennessee, Kentucky, Texas, and Alabama operate state-supported systems of traveling libraries. Collections of from 25 to 60 books are put up in strong, trunk-like boxes and sent to groups of five or ten responsible farmers, to country school committeemen, etc.

A postal card addressed to the State Library, Richmond, Va., the North Carolina Library Commission, Raleigh, N. C., the State Board of Education, Nashville, Tenn., the Department of Archives and History, Montgomery, Ala., the Kentucky Library Commission, Frankfort, Ky., or the State Library and Historical Commission, Austin, Texas, by residents of the respective states, will bring full information as to how these libraries may be obtained.

Teachers of Agriculture and Home Economics—Government Pays One-half to All of Salaries

ANY rural high school or community in which there is a group of boys or girls desiring instruction in vocational agriculture or home economics, or both, may secure financial aid from the Federal and state governments to the extent of one-half to all the salaries of the teachers of agriculture and home economics.

Write to your state supervisor for information on how to get the agricultural and home economics instruction for your school and community. Following is the list of supervisors for our territory:

Carolina-Virginia Edition.

North Carolina: T. E. Browne, Director Vocational Education, West Raleigh; Roy H. Thomas, Supervisor Agricultural Education, W. Raleigh; Miss Edith M. Thomas, Supervisor Home Economics Education, W. Raleigh.

Virginia: T. D. Eason, Supervisor Agricultural Education, Richmond; Mrs. Ora H. Avery, Supervisor Home Economics Education, Richmond.

South Carolina: Verd Peterson, Supervisor Agricultural Education, Columbia; Miss Lillian Hoffman, Supervisor Home Economics Education, Columbia.

School Farms and Community Fairs: Bulletins on

EVEN if you are only just a little interested in community fairs, it will do you no harm to drop a postal to the United States Department of Agriculture, Washington, D. C., and ask for a free copy of Farmers' Bulletin No. 870, "The Community Fair."

By sending 5 cents to the United States Bureau of Education, Washington, D. C., any interested person can get Bulletin No. 28, by Prof. Zebulon Judd, formerly of Wake County, N. C., now of Alabama Polytechnic Institute, fully describing the "school farm" plan. We should like to see a school farm in connection with every Southern school this year.

Location of Southern Experiment Stations

Alabama—Auburn.
Arkansas—Fayetteville.
Florida—Gainesville.
Georgia—Experiment.
Louisiana—Baton Rouge.
Mississippi—Agricultural College.
Oklahoma—Stillwater.
North Carolina—Raleigh.
South Carolina—Clemson College.
Texas—College Station.
Virginia—Blacksburg.

North Carolina Agricultural Leaders

STATE Department of Agriculture: Commissioner, W. A. Graham; Secretary K. W. Barnes; Horticulturist, C. D. Matthews; Entomologist, Franklin Sherman; Veterinarian, Dr. Wm. Moore; Botanist, J. L. Burgess; Agricultural Chemist (vacant); Crop Reporter, Frank Parker.

North Carolina Agricultural Experiment Station and Extension Service.—B. W. Kilgore, Director; C. B. Williams, Agronomy; Franklin Sherman, Entomology; Dan T. Gray, Animal Industry; C. D. Matthews, Horticulture; F. A. Wolf, Plant Diseases; B. F. Brown, Markets; C. R. Hudson, Farm Demonstration; Mrs. Jane S. McKimmon, Home Demonstration; H. M. Lynde, Drainage; H. B. Krausz, Farm Forestry; E. R. Raney, Farm Engineering.

State College of Agriculture: President, W. C. Riddick; Dean of Agriculture, C. B. Williams.

State Farmers' Union: President, R. W. H. Stone, Greensboro; Vice-President, Dr. J. M. Templeton, Cary; Secretary-Treasurer, W. L. Bagwell, Raleigh; Executive Committee: W. B. Gibson, Statesville; W. L. Bagwell, Raleigh; J. L. Cherry, Hobgood; H. Q. Alexander, Matthews; Orlin Cruse, Rowan.

North Carolina Farmers' Convention: President, B. B. Miller, Salisbury; Secretary-Treasurer, W. F. Pate, West Raleigh.

North Carolina Agricultural Society: President, Mrs. George W. Vanderbilt, Biltmore; Secretary, J. E. Pogue, Raleigh.

State Horticultural Society: President, H. P. Corwith, Saluda; Secretary, John Eubanks, Hendersonville.

State Federation of Farm Bureaus: President, B. B. Miller, Rowan; 1st Vice-President, J. A. Young, Guilford; 2nd Vice-President, D. J. Lybrook, Forsyth; Secretary, J. M. Gray, Asheville; Treasurer, J. L. Fisher, Brown; Directors, L. L. Roberts, Madison; W. H. Pharr, Mecklenburg; W. B. Crawford, Iredell; L. C. Arrow, Gaston; Mr. Morehouse, Wilkes; Mr. Leonard, Davidson.

State Farmers' Alliance: President, B. F. Shelton, Edgecombe County; Vice-President, Eddie Cullipher, Bertie County; Secretary-Treasurer, J. C. Bain, Cumberland County; Lecturer, H. M. Cates, Alamance County.

North Carolina Dairymen's Association: President, J. F. Diggs, Rockingham; Vice-President, F. H. Beal, Linwood; Secretary-Treasurer, J. A. Arey. Executive committee composed of officers and H. P. Lutz, Newton, J. W. Haynes, Asheville.

North Carolina Poultry Association: President, Dr. H. H. Newman, Salisbury; Vice-President, E. C. Fulgum, Wilson; Secretary-Treasurer, Dr. B. F. Kaupp, Raleigh.

State Board of Agriculture—By Congressional Districts: First, F. P. Latham, Belhaven; Second, C. W. Mitchell, Aulander; Third, R. L. Woodard, Pamlico; Fourth, Clarence Poe, Raleigh; Fifth, R. W. Scott, Haw River; Sixth, A. T. McCallum, Red Springs; Seventh, C. C. Wright, Hunting Creek; Eighth, I. N. Paine, Statesville; Ninth, H. Q. Alexander, Matthews; Tenth, A. Cannon, Horse Shoe.

North Carolina Cotton Association: President, L. S. Tomlinson, Wilson; Vice-Presidents, Frank Gough, Lumberton; B. W. Kilgore, Raleigh; Secretary, A. W. Swain, Raleigh.

Farmers' Mutual Fire Insurance Association: President, T. B. Parker, Raleigh; Vice-President, James Amos, Henderson; Secretary-Treasurer, Horne Clark, Raleigh.

North Carolina Landowners' Association: President, L. L. Finkelstaet; Vice-President and General Manager, W. A. McGirt, Wilmington.

State Superintendent of Education—Dr. E. C. Brooks, Raleigh.

North Carolina Tobacco Association: President, Stephen C. Bragaw; Vice-President, T. G. Currin; Secretary-Treasurer, E. G. Moss, Raleigh; Executive Committee—J. Y. Joyner, J. Bryan Grimes, J. A. Groome, F. L. Carr, W. B. Daniels, Clarence Poe.

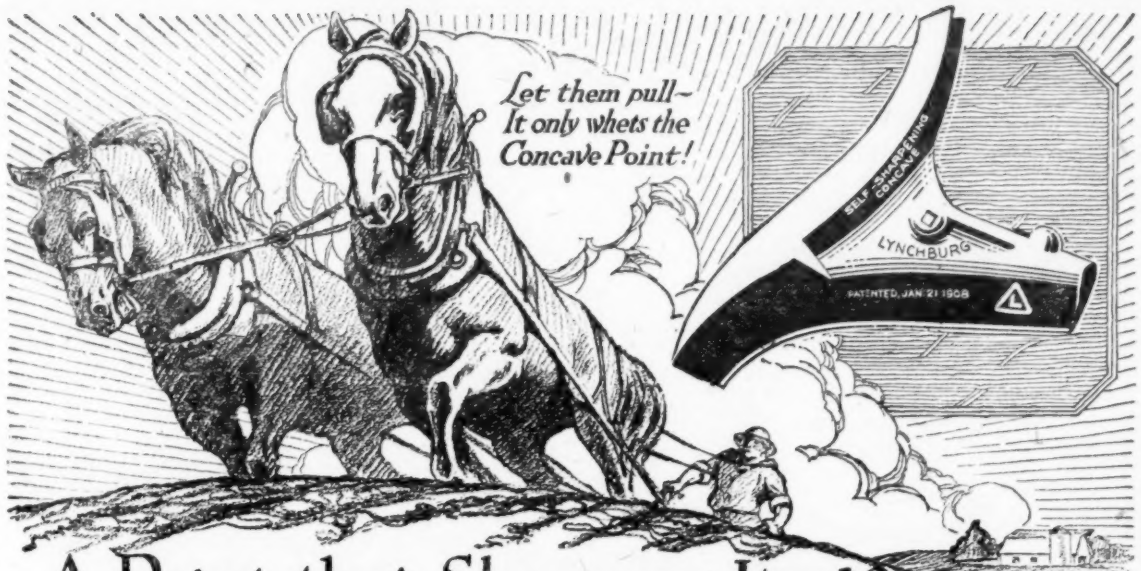
South Carolina Agricultural Leaders

Commissioner of Agriculture—B. Harris, Columbia; Secretary, Wm. Banks, Columbia.

Officers of Extension Service: Director, W. W. Long; Assistant Director, D. W. Watkins; 1st District Agt., A. A. McKeown, Rock Hill; 2nd District Agt., C. A. McFaddin, Manning; 3rd District Agt., H. S. Johnson, Aiken; Animal Husbandman, L. V. Starkey; Dairy Husbandman, W. W. Fitzpatrick; Agronomist, C. P. Blackwell; Horticulturist, G. P. Hoffman; Poultry Husbandman, Frank C. Hare; Entomologist, A. F. Conradi; Plant Pathologist, H. W. Barre; Marketing Agent, F. L. Harkey; Supervising Agent Boys' Club Work, L. L. Baker; Rural Sociology, W. H. Mills; Agricultural Editor, A. B. Bryan.

All of above at Clemson College unless otherwise stated.

(Continued on page 28, column 4



A Point that Sharpens Itself

HERE is something revolutionary in plow-shares, the "LYNCHBURG" Concave, Self-sharpening Share, that whets itself on the soil where the ordinary plow point is dulled with use. The patented "LYNCHBURG" share becomes sharper the longer it is run. Guaranteed to outwear two of the old style shares. Made for other standard plows. They cost no more than ordinary points.

With the moldboard braced direct to the standard, "LYNCHBURG Chilled Plows" are the most rigid plows constructed. The moldboards are annealed by a special process. The landside handle of "LYNCHBURG Chilled Plows" is attached to the standard with two bolts and the moldboard handle is attached to a malleable handle part already fitted at the factory.

It is a joy to run a furrow with "LYNCHBURG Chilled Plows." Light of draft, proper in suction, with the moldboard perfectly turned, "LYNCHBURG Chilled Plows" are easy on man and team.

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For clay and hard soils there is no share that can compare with the "LYNCHBURG" concave self-sharpening share. Costs no more than the ordinary share, yet wears without whetting for 2 or 3 times the ordinary share.

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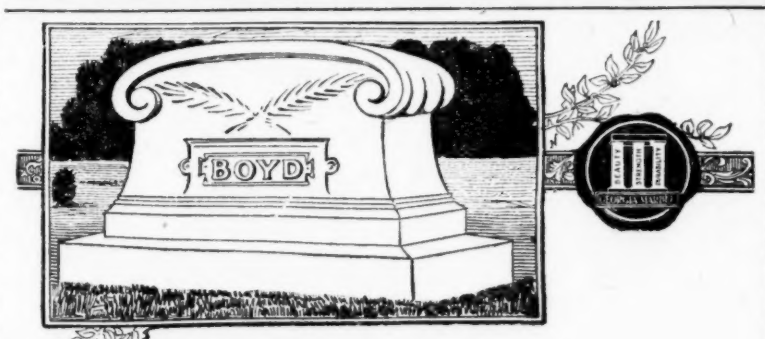

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Care should be taken, however, to select a material which is not only beautiful, but which can retain *forever* its original beauty.

GEORGIA MARBLE possesses this attribute. It is formed of tiny overlapping crystals, making it non-absorbent and giving it the essential qualities of beauty, strength and durability.

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Agency Department, Raleigh, N. C.

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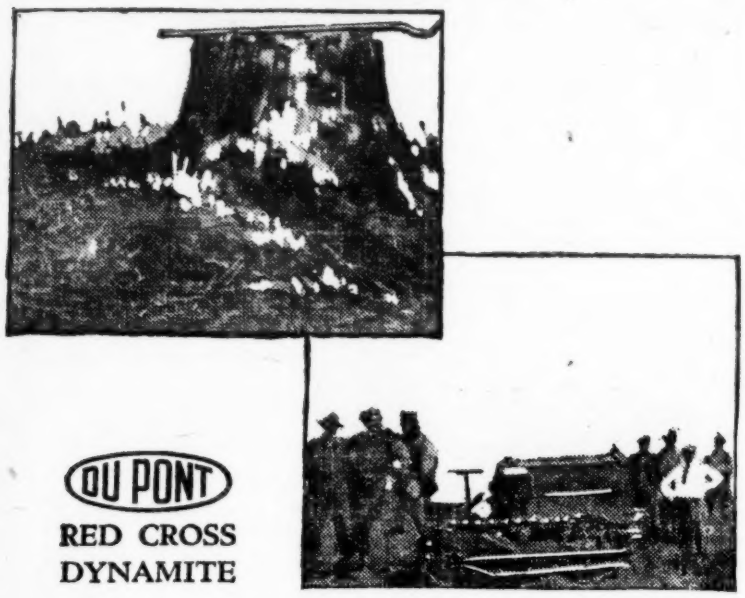

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This? *Horses unfit for work because of galls, chafes or bruises on the shoulders.*

or This? *Horses that pull willingly with necks and shoulders properly protected by Tapatco Stuffed Collar Pads.*

Pat. in U. S. Dec. 1, 1914
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IN early spring horses' shoulders are usually plump and tender. In this softened condition, heavy field work tends to quickly develop hollows. Tapatco Stuffed Pads fit snugly under the collar and adjust themselves to this changed condition, thus affording the needed protection.

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Our Stuffed Collar Pads, filled with specially prepared Composite Stuffing, are soft, absorbent, cushion-like--features not found in unstuffed pads. And Tapatco Stuffed Pads guarantee the greatest degree of protection and make possible the use of badly worn horse collars that would otherwise be thrown away.

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In the Farm Hog Lot

The Leading Breeds of Swine

Type	Poland-China	Duroc-Jersey	Chester White
Origin	Southwestern Ohio	N. Jersey and N. Y.	Pennsylvania
Color	Black and white	Cherry red	White
Ears	Drooping	Drooping	Drooping
Distribution	Wide, especially in Corn Belt	All over United States	Especially in Corn Belt
Prolificacy	Medium	Good	Good
Strong points	Early maturing Growthy	Early maturing Adaptable	Early maturing Growthy
Type	**Berkshire**	**Hampshire**	**Tamworth**
Origin	England	Uncertain	England
Color	Black with white points	Black with white belt	Red or sandy
Ears	Straight	Straight	Straight
Distribution	Wide, in Corn Belt and Canada	Especially in Corn Belt	Northern U. S. and Canada
Prolificacy	Good	Good	Excellent
Strong points	Quality Good grazers	Quality Good grazers	Prolificacy Grazers

Points in Judging Hogs

WEIGHT is an important factor in judging hogs, as they are practically always sold by the pound. It is absolutely necessary for a man to be a good judge of hogs, that he should know the relative size of the animals at various ages.

2. In **form,** the animal should be blocky, massive, and compact. The animal should stand squarely on his feet, and have a strong back.

3. **Quality** is indicated by the fineness of the hair, the smoothness of his skin, the size and smoothness of the bone and joints. A large boned hog with coarse joints indicates a coarse grained meat, but we want an animal with bones sufficiently large to carry the weight easily at all times.

4. **Condition**—Breeding animals should carry a sufficient amount of flesh to be vigorous, should be healthy and free from external parasites. For fattening purposes the animal should be in such condition that it will make the best meat.

5. **Head and neck:** The eyes should be bright and a good distance apart. Mouth and face should be broad, indicating strength and massiveness. The curvature or straightness of the face will depend upon the breed. The shape and size of the ear will also depend upon the breed. The jowl should be broad, not extremely large, and should be free from flabbiness. The neck should be very short, but should blend well with the head and shoulders.

6. The **shoulders** should be broad and very deep, well covered with even flesh, very smooth on top. The shoulder should be compact in its make-up.

7. The **legs** should be short with bones of good size, and these should be straight and not turned in, as this makes the animal knock-kneed and gives a contracted appearance when the animal is viewed from the front.

8. The **pasterns** should be short and the toes close together and not spreading. The pasterns should be straight, holding the dew claws well up from the ground.

9. The **chest** should be deep and wide to give room for large lung capacity. The heart girth should be large, not cut up in the fore flank. The fore ribs should be well sprung with plenty of flesh immediately back of the shoulders. The back should be slightly arched, giving the animal plenty of strength. It must be remembered that hogs are very heavy, and an arched back is decidedly stronger than a straight one. The neck should be broad and evenly covered with thick flesh.

10. The **loin** should extend well forward, should be broad and well covered with thick flesh, and join in well with the back and rump.

11. The **sides** should be deep, of good length and smooth. Wrinkles are objectionable, as they cause waste in the carcass, and they represent an inferior product. The sides should carry out straight from the shoulders to the hams.

12. The **under line** should be straight, free from paunchiness; also the flesh of the under line should be firm and not flabby.

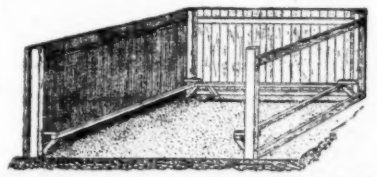
13. The **flank** should be full and well let down. Where the flanks are cut up it makes an ill-shaped side and ham, and detracts from the appearance, as well as increases the amount of waste material.

14. The **rump** should be the same width as the back, reasonably level, of good length, and smoothly covered with thick flesh.

15. The **hams** should be wide, carrying out the width of the body, and well let down to the hocks, giving them a full appearance and heavy weight. Wrinkles in the hams are very objectionable.

16. The **legs** should be straight, short and strong, of fair width apart, set squarely under the hams. The hocks should be straight and the pasterns short and straight.

L. T. W.



FARROWING PEN WITH FENDERS TO PROTECT YOUNG

Grazing Crops for Hogs

CROPS	WHEN PLANTED	HOW PLANTED SEED PER ACRE	GRAZING PERIOD
Alfalfa	Sept., Oct., March	Broadcast 20 to 25 pounds	12 to 18 months after seeding March to October.
Melilotus	Feb. and March	Broadcast 10 to 20 pounds	60 days after seeding at any season when growing.
Red Clover	Aug. 15 to Sept 15	Broadcast alone 15 pounds of seed	60 to 90 days after seeding, best grazing March, April and May.
Crimson Clover Bur Clover	Aug. 15 to Sept 15	Broadcast 15 pounds 40 to 60 lbs. in bur	
Cowpeas	May 1 to July 1	1¼ bu. seed broadcast, ½ bu. in drill	75 to 90 days after seeding; last 36 to 90 days.
Soy beans	May 1 to July 1	1½ bushels seed broadcast ½ bushel in drill	90 to 100 days after seeding; last 60 to 90 days.
Velvet beans	May 10 to June 15	1 to 2 pecks in drill	150 to 180 days after seeding; last 60 to 90 days.
Peanuts--Spanish	May 1 to July 1	1 to 2 bushels not hulled in drill	100 to 120 days after seeding; last 60 to 90 days.
Lespedeza	March and April	1 bushel or 24 lbs. seed broadcast	75 to 90 days after seeding; grazed any time during warm weather or while growing.
Vetch	Sept. and October	With oats or some cereal, 2 pks. seed	Grazed during winter and spring, but makes growth until March, April, and May.
Oats Wheat Barley Rye	Sept. 1 to Nov. 1 Oct. 1 to Nov. 15 Sept. 15 to Oct. 15 Sept. 1 to Nov. 15	2 to 3 bushels seed broadcast 1¼ to 2 bushels seed broadcast 2 to 2½ bushels seed broadcast 2 to 2½ bushels seed broadcast	60 to 90 days after seeding —November to June.
Sorghum	April 15 to July 1	Broadcast 1 to 2 bu. seed	60 to 90 days after seeding —last 30 to 90 days.
Chufas	March 15 to July 1	2 to 4 pecks in rows	120 to 150 days after seeding; last all winter.
Sweet potatoes	Plants set in May	7,000 to 9,000 plants, 3 ft. rows, 1½ to 2 feet in row	150 to 160 days after planting; last 60 to 90 days.
Rape	Sept. and Feb. 15 to March 10	In rows 3 to 4 bu. seed, broadcast 6 to 8 pounds seed	45 to 60 days after seeding, last all winter; spring seeding, until May 15.

Feeding Cottonseed Meal to Hogs

COTTONSEED meal should not constitute more than one-third or one-fourth the ration of hogs.

2. Cottonseed meal should not be fed for more than four or five weeks at any one period; but after a rest of three to five weeks, the cottonseed meal may again be fed for another period of four or five weeks.

3. When hogs are on green feed, cottonseed meal may be fed in larger quantities and for longer periods than when dry feeds only are used.

4. Possibly the feeding of wood ashes or copperas with the cottonseed meal, and souring the cottonseed meal mixed with water before feeding may have some effect in lessening its poisonous action on hogs.

5. Except for its poisonous effects on some hogs, cottonseed meal is a most excellent feed for hogs, making good gains and producing a firm carcass.

6. It appears that some samples of cottonseed meal are more toxic or poisonous for hogs than are other samples; but since no one knows just what the poisonous matter is, it is not practicable to distinguish the less poisonous from the more poisonous samples of meal, except by trial.

7. Cottonseed meal, forming one-third or one-fourth the ration, is a most excellent feed for hogs for the last four weeks before slaughtering, especially for hogs grazed on peanuts, soy beans, and other soft pork producing feeds; for it produces good gains and hardens the fat.

Some Hog-killing Suggestions

1. HAVE the animals in good condition, gaining in flesh and not losing.

2. Withhold food from 12 to 18 hours before killing. This keeps the intestinal tract from being distended and aids materially in ease of handling.

3. Be sure to secure good bleeding.

4. Don't have the water too hot when scalding. The temperature should not be above 175 degrees. When this temperature is not exceeded, there is little danger of "setting" the hair.

5. The carcass of the hog may be cut easier if allowed to cool over night after killing.

6. The meat should remain in the salt or curing solution from 40 to 60 days, depending on the size of the pieces.

7. When the meat is removed from the salt or brine solution it should be washed off and allowed to drip for a day or so and then rapidly smoked for three or four days.

8. After smoking the meat, it should be wrapped and sacked to protect it from flies and other vermin.

9. Meat should not be allowed to freeze; especially if it is killed in the afternoon it should not freeze that night.

Meat Curing Suggestions

TO EACH hundred pounds of meat a good curing brine is made as follows:

12 pounds of common salt,
3 pounds of brown sugar,
3 ounces of saltpeter,
6 gallons of water.

In case sugar is not available, ordinary syrup may be used. These articles are placed in a kettle and boiled gently for two hours, then set aside and cooled for use. It is best to make this solution the day before so that it will be cold when the meat is put into it.

In case the brine solution becomes ropy, remove the meat from the brine; drop in a small amount of common soda and stir well. If this doesn't remove the ropiness it is a safe plan to make a new solution and put the meat into that.

In smoking meat use hardwood chips or bark or corn cobs. Do not use soft wood that makes a blaze.

Sacking the Meat

MEAT which hangs in the smokehouse unprotected usually becomes infested with "skippers." To prevent this, wrap the individual pieces in old newspapers or wrapping paper. Then place them in a strong sack and tie it tightly at the top. Give the sack a coat of paint on the outside. The paint is made as follows:

.6 pounds of barium sulphate,
.1 pound of common glue.
.2 pounds of lead chromate.
.1 pound of common flour.

The flour is dissolved in about four gallons of water, while the lead chromate could be dissolved in about 2 quarts of water in a separate vessel. The lead chromate solution, together with the glue, should then be added to the flour solution, the whole mixture brought to a boil and the barium sulphate added slowly while stirring. This solution should be made the day before using. It may be applied with a brush to the sack before placing the meat in it, or it may be dipped in the solution.

Marketable Products of the Average Hog

THE Institute of American Meat Packers states that the average live hog weighs 221 pounds when marketed, that he dresses 76.6 per cent of this live weight and that the "products finish out 72 per cent of the live weight." In other words, a live hog weighing 221 pounds furnishes the following weights of finished products:

	Lbs.
Hams	31
Picnics (shoulders)	12
Boston butts	9¼
Clear plates	5
Bellies	31
Fat backs	13
Loins	21
Spare ribs	4½
Lard	21
Trimmings	11
Total	159

Of course, these are only averages.

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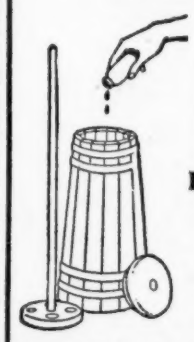

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PLANTING CHART FOR ALL-THE-YEAR GARDEN

THE following planting chart was prepared by F. J. Crider. The dates given approximately fit a belt extending east and west through the Central South, including the southern half of North Carolina, Tennessee, and Arkansas, all of South Carolina and the northern halves of Georgia, Alabama, Mississippi, Louisiana and Texas. South of this belt—in southern Georgia, Alabama, Mississippi, Louisiana, and Texas, and in all Florida, plantings on an average may be made some two weeks earlier than the dates given in the chart; while to the north of this belt—in Virginia, northern North Carolina, Tennessee, northern Arkansas, and central and northern Oklahoma, plantings should be made some two weeks later.

VEGETABLE	POPULAR VARIETIES	PLANTING DATES						PLANTING DISTANCES			Seed For 100 Feet of Row	SEASON OF USE				SPECIAL POINTS
		Spring and Summer Garden			Fall and Winter Garden							Spring and Summer Garden		Fall and Winter Garden		
		Hot Bed	Open Bed	Garden	Hot Bed	Open Bed	Garden	Betw'n Rows	In Row	Dpth of sd.		When Ready	Edible Period	When Ready	Edible Period	
Artichoke–Globe	Green Globe			Mar. 1 Apr 30				5 ft	2 ft	1½ in	2 pkgs	Jun 1 Jul 1	All Sum'er			Perennial–plant every 3 years
Asparagus–Seed	Palmetto			Feb 1 Apr 15				5 ft	Drill thin 2 ft	1½ in	1 oz	Mar of 3rd yr	to Jun			Perennial–lasting 10 to 15 years in good condition
Asparagus–Roots	Palmetto			Oct 1 Apr 1				5 ft	2 ft	6 in	50 roots	Mar of 2nd yr	to Jun			Requires abundant moisture and plant food
Bean–Bush Wax	Wardwell Kidney Pencil Pod Black			Mar 1 Sept 1				3 ft	Drill	2 in	1 pt	6-7 wks	2-4 wks			Plant every 2 weeks for succession
Bean–Bush Green	Bountiful Burpee's Stringless							3 ft	Drill	2 in	1 pt	6-8 wks	3-5 wks			Always plant stringless varieties
Bean–Pole Wax	Golden Cluster			Apr 1 Jul 15				3 ft	3 ft	2 in	1 pt	10-12 wks	to frost			Remove pods at maturity to keep in bearing
Bean–Pole, Green	Scotia Kentucky Wonder							3 ft	3 ft	2 in	1 pt	10-12 wks	to frost			Allow the crop to mature for winter and fall beans
Bean–Bush Lima	Henderson's Fordhook			Apr 15 Jun 15				3 ft	12 in	2 in	1 pt	10-12 wks	to frost			Allow late crop to mature for winter and fall beans
Bean–Running Lima	Carolina Sieva Large White			Apr. 15 Jun 15				3 ft	3 ft	2 in	1 pt	12-16 wks	to frost			Allow late crop to mature for winter and fall beans
Beet–Early	Ex Early Bassano Ex Early Egyptian			Feb 15 Mar 30			Aug 1 Sept 1	3 ft	Drill thin 4 in	¾ in	1 oz	7-8 wks	4-6 wks	7-8 wks	All Fall	Sow in hot bed in Jan. and transplant for earliest beets
Beet–Late	Crimson Globe Crosby Egyptian			Mar 1 Jul 1			Jul 15 Aug 15	3 ft	Drill thin 4 in	¾ in	1 oz	10-12 wks	6-10 wks	10-16 wks	All Winter	Protect during winter with soil
Brussells Sprouts	Perfection	Dec 15 Feb 1		Feb 1 Apr 1		May 1 Jun 15	Jul 15 Aug 15	3 ft	3 ft	½ in	2 pkgs	12-16 wks	6-8 wks	Oct 15 Nov 15	Fall-Winter	Does best in fall–Protect during winter
Cabbage–Early	Jersey Wakefield Charleston Wakefield		Sept 1 Oct 1	Dec 1 Feb 1		May 15 Jun 15	Jul 15 Aug 30	3 ft	2 ft	½ in	2 pkgs	10-14 wks	6-8 wks	Oct 1 Nov 1	All Fall	Set winter plants deep to prevent frost injury
Cabbage–Late	Succession Large Flat Dutch	Feb 1 Mar 1		Mar 1 Apr 15		May 15 Jun 15	Jul 15 Aug 30	3 ft	3 ft	½ in	2 pkgs	12-18 wks	6-8 wks	Nov 1 Dec 15	All Winter	Protect during winter
Carrot	Danvers Half Long Chantenay			Feb 15 Apr 15			Jun 15 Jul 15	3 ft	Drill thin 2 in	½ in	1 oz	8-10 wks	Sum'er Fall	Sept 15 Oct 15	All Winter	Leave in ground during winter–Protect with soil
Cauliflower	Early Snowball Dwarf Erfurt	Jan 1 Feb 15		Feb 15 Mar 30		Jun 15 Aug 1	Aug 1 Sept 1	3 ft	2 ft	½ in	1 pkg	12-16 wks	4-6 wks	Oct 15 Dec 1	Fall-Winter	Requires fertile soil and abundant moisture
Celery	Giant Pascal Gold Self-Blanching					Mar 1 Apr 30	Jul 15 Aug 30	5 ft	6 in	¼ in	2 pkgs			Nov 1 Dec 1	Fall-Winter	Seed bed requires shade and moisture
Chard	Lucullus			Apr 1 May 15				3 ft	Drill thin 1 ft	¾ in	1 oz	Jun 15 Jul 15	All Sum'er			Mid-ribs of leaves used as asparagus
Chicory	Witloof				D 1-30 (roots)		Jun 1 Jul 15	3 ft	Drill thin 3 ft	½ in	1 oz			Nov 15 Dec 15	All Winter	Bury roots in hot-bed or warm cellar to force
Chive	Common			Feb 1 Apr 15			Sept 1 Oct 15	3 ft	Drill	½ in	1 oz	16-24 wks	All year	16-24 wks	All year	Perennial–Used for seasoning–Onion flavor
Collard	Georgia Car. Short Stem					May 1 Jun 30	Jul 1 Aug 15	3 ft	3 ft	½ in	2 pkgs			Oct 15 Nov 15	All Winter	Protect with straw
Corn Salad	Large R. Leaved						Aug 1 Sept 30	3 ft	Drill thin 1 ft	1½ in	1 pt			10-12 wks	Fall-Winter	
Corn	Early Adams Stowell Evergreen			Mar 1 Aug 15			Jul 1 Aug 15	4 ft	2 ft	2 in	½ pt	10-12 wks	2-4 wks	10-12 wks	to frost	Plant every 3 weeks for succession
Cress	Fine Curled			Feb 15 Apr 1			Aug 15 Sept 15	3 ft	Drill	½ in	½ oz	6-8 wks	5-8 wks	Oct 1 Nov 1	Fall-Winter	Served raw or cooked
Cucumber	White Spine Klondyke			Mar 15 Apr 30			Jul 15 Aug 15	6 ft	4 ft	2 in	½ oz	8-10 wks	6-10 wks	8-10 wks	to frost	Picking mature fruit prolongs bearing
Egg Plant	Black Beauty N. Y. Improved	Feb 1 Mar 15		Apr 15 May 30				3 ft	3 ft	½ in	2 pkgs	12-15 wks	to frost			Plants should not become stunted
Endive	Green Curled			Apr 1 May 1				3 ft	Drill thin 8 in		1 oz	8-12 wks	4-8 wks			Used as summer "lettuce"
Horse Radish–Roots	Common						Dec 1 Apr 15	3 ft	18 in	6 in	70 roots			Oct of 2nd yr	Fall-Winter	Perennial–should be confined to border
Kale	Curled Siberian			Feb 1 Apr 15			Aug 15 Sept 15	3 ft	Drill thin 1 ft	½ in	1 oz	6-8 wks	6-10 wks	Oct 15 Nov 15	Fall-winter Spr	Splendid for winter greens
Kohl-Rabi	Early White Vienna			Mar 1 Apr 30			Jul 1 Aug 30	3 ft	Drill thin 6 in	½ in	1 oz	10-12 wks	4-5 wks	10-12 wks	4-5 wks	Used while tender
Leek	Large Flag					Mar 1 Apr 15	Jun 1 Jul 15	3 ft	4 in	½ in	2 pkgs			Nov 1 Dec 1	All Winter	Good substitute for green onions–Hardy
Lettuce–Garden	Hanson			Feb 15 Apr 15			Aug 15 Oct 1	3 ft	Drill thin 1 ft	¼ in	½ oz	6-10 wks	4-6 wks	6-10 wks	6-8 wks	Make succession plantings every 3 weeks
Lettuce–Frame	Big Boston				Sept 1 Feb 1			10 in	Drill thin 9 in	¼ in	2 pkgs			6-8 wks	6-8 wks	Make 3 plantings at intervals of 2 months
Martynia	Proposcidea	Feb 1 Mar 15		Apr 1 May 30				3 ft	3 ft	1 in	2 pkgs	10-12 wks	6-10 wks			Used for pickles
Muskmelon	Eden Gem Montreal			Mar 20 May 15				4 ft	4 ft	2 in	2 pkgs	10-12 wks	4-6 wks			Early plantings less affected by worms
Mustard	Southern Curled			Feb 15 Apr 15			Sept 1 Oct 15	3 ft	Drill	½ in	1 oz	5-7 wks	All Spring	5-7 wks	Fall-Winter	Very easily grown
Okra	Kleckley's Favorite Perkin's Mam. Pod			Apr 1 May 15					3 ft	2 in	1 oz	10-12 wks	to frost			Keep mature pods removed
Onion–Sets	Yellow Danvers Silver Skin			Jan 15 Apr 1			Sept 1 Nov 1	18 in	4 in	2 in	1½ qt	6-8 wks	Spring-Summer	6-8 wks	Winter-Spring	Use in green and dried stage
Onion–Seed	Prizetaker Southport Globe			Feb 1 Apr 1			Sept 1 Oct 15	18 in	Drill thin 4 in	½ in	1 oz	Jul 1 Aug 15	Fall-Winter	Jul 1 Aug 15	Fall Winter	Onions from seed keep best require cool, dry storage
Parsnip	Hollow Crown						Mar 1 May 15	3 ft	Drill thin 6 in		1 oz			Oct 1 Nov 1	Fall-Winter	Allow to remain in ground over winter
Parsley	Moss Curled			Feb 15 Apr 30				18 in	Drill thin 8 in	½ in	1 oz	12-14 wks	Sum'er		Fall Winter	Used largely for garnishing–good border plant
Peas–Round	Alaska Extra Early			Nov 15 Feb 15				3 ft	Drill	4 in	1 ½pt	10-12 wks	2-4 wks			Poorer quality than wrinkled but more hardy
Peas–Wrinkled	Thos. Laxton Champion of England			Mar 1 Apr 15			Aug 1 Sept 1	3 ft	Drill	4 in	1½ pt	8-10 wks	4-8 wks	8-10 wks	to frost	Make succession plantings in spring
Pepper	Ruby King Pimiento	Feb 1 Mar 15		Apr 1 May 15				3 ft	3 ft	½ in	2 pkgs	12-14 wks	All Sum'er			Pull stalks just before frost and keep for winter
Potato–Irish, Early	Red Bliss Irish Cobbler			Jan 15 Apr 15				3 ft	1 ft	6 in	4 ozs	10-12 wks	All Sum'er			Store in cool, dark, well-ventilated place
Potato–Irish, Late	Lookout Mountain						Jul 1 Aug 10	3 ft	1 ft	6 in	4 ozs			Oct 15 Nov 1	All Winter	Protect from freezing
Potato–Sweet	Porto Rico Nancy Hall	Mar 1 Apr 15		Apr 15 Aug 1	Mar 1 Apr 15		Apr 15 Aug 1	3 ft	18 in	plants 6 in	70 plants	12-16 wks	to frost	Fall	Fall-winter-Spri	Use vine cuttings to prevent rot
Pumpkin	Sugar Virginia Mammoth						May 1 Jul 1	10 ft	10 ft	2 in	1 oz			Oct 1 Nov 1	Fall-Winter	Requires cool (not freezing) dry storage
Radish–Early	Scarlet Turnip Long Scarlet			Feb 1 Apr 1			Sept 1 Dec 1	3 ft	Drill thin 1 in	½ in	1 oz	4-5 wks	2-3 wks	4-5 wks	2-3 wks	Plant every 5 weeks for succession
Radish–Late	Celestial Rose China						Aug 1 Sept 1	3 in	Drill thin 3 in	½ in	1 oz			Nov 1 Dec 1	All Winter	Let stand in ground or store in moist sand
Radish–Frame	Scarlet Globe Wood's Early Frame				Nov 15 Feb 1			3 ft	Drill thin 1 in	½ in				4-5 wks	3-4 wks	May be planted between rows of lettuce
Rape	Dwarf Essex			Feb 15 Mar 30			Sept 1 Oct 1		Drill	½ in		6-8 wks	All Spring	Nov 1 Dec 1	All Winter	Rivals kale as winter greens
Rhubarb–Roots	Linneaus			Oct 1 Apr 1				6 ft	3 ft	4 in	35 roots	Apr of 2nd yr	8-12 wks			Requires cool, moist shaded location
Salsify	Mam. Sandwich Island						Mar 1 Apr 15	3 ft	Drill thin 2 in	½ in	1 oz			Sept 15 Nov 1	Fall-Winter	May remain in ground over winter
Spinach	Long Standing (Spring) Norfolk Savoy, tall			Feb 15 Apr 1			Sept 1 Oct 1	3 ft	Drill thin 1 ft	1 in	1 oz	6-8 wks	All Spring	Oct 15 Nov 1	Fall Winter	Protect with straw during winter
Spinach–Summer	New Zealand			Mar 1 Apr 15				3 ft	2 ft	1 in	1 oz	8-12 wks	All Sum'er			Fine for summer greens
Squash–Summer	Wood's Early Prolific Summer Crookneck			Mar 15 Apr 30				6 ft	4 ft	2 in	1 oz	8-12 wks	6-10 wks			
Squash–Winter	Cushaw						May 1 Jul 1	6 ft	4 ft	2 in	1 oz			Oct 1 Nov 1	All Winter	Stored the same as pumpkins
Tomato–Early	Spark's Earliana Bonnie Best	Jan 15 Mar 1		Mar 15 Apr 15		May 1 Jun 15	Jul 1 Aug 1	3 ft	2 ft	½ in	2 pkgs	10-12 wks	6-8 wks	10-12 wks	to frost	Use large, stocky plants for transplanting
Tomato–Late	Stone Livingston's Globe	Feb 1 Mar 15		Apr 1 Jun 1		Apr 15 Jun 1	Jun 15 Jul 15	4 ft	3 ft	½ in	2 pkgs	12-14 wks	8-12 wks	12-14 wks	to frost	Pick green fruit before frost–Will ripen
Turnip	Purple Top Yellow Globe			Mar 1 Apr 15			Jul 1 Sept 1	3 ft	Drill thin 6 in	½ in	½ oz	6-8 wks	4-8 wks	6-8 wks	Fall Winter	May remain in ground over winter–Protected
Turnip–Greens	Seventop			Mar 1 Apr 1			Aug 1 Oct 1	3 ft	Drill	½ in	½ oz	5-7 wks	6-8 wks	5-7 wks	Winter-Spring	
Turnip–Rutabaga	Purple Top Yellow Large White						Jul 1 Aug 15	3 ft	Drill thin 1 ft	½in	½ oz			Oct 1 Nov 1	All Winter	May remain in ground protected with soil

Field Crop and Legume Information

Crop Rotations Recommended for North Carolina Farmers

I—EASTERN SECTION

Crop Rotation for Corn and Cotton Farmers

FIRST year—Cotton followed by crimson clover.
Second year—Corn with cowpeas or soy beans.
Third year—Oats, oats and vetch, or oats and crimson clover, followed by soy beans or cowpeas, rye.

Crop Rotation for Tobacco and Cotton Farmers

First year—Tobacco followed by oats and vetch.
Second year—Oats and vetch for hay, followed by soy beans or cowpeas turned under.
Third year—Cotton with crimson clover sowed in cotton after first picking and clover plowed under.
Fourth year—Corn.

Crop Rotation for Tobacco Farmers Desiring Pasturage

First year—Tobacco followed by rye and crimson clover, or rye and vetch in fall.
Second year—Corn with cowpeas or soy beans turned under, oats and vetch.
Third year—Oats and vetch followed by soy beans or cowpeas turned under, grass mixture in early fall.
Fourth year—Grasses.
Fifth year—Grasses.

Crop Rotation for Farmers Growing Peanuts as Important Crop

First year—Peanuts followed by crimson clover and rye.
Second year—Corn with cowpeas or soy beans sowed in the corn.
Third year—Corn, followed by crimson clover, or rye and vetch.

II.—FOR LOWER PIEDMONT SECTION

For Cotton and Corn Farmers

For farmers of this section who are growing cotton, the same rotation recommended above for Eastern farmers will give good results.

Another one that we have found to work well at the Piedmont farm in Iredell County is as follows:
First year—Cotton, with rye sowed in cotton during early fall.
Second year—Corn, followed by fall-sowed wheat.
Third year—Wheat, with red clover sowed on wheat during February.
Fourth year—Red clover, first crop cut for hay and last crop turned under.

For Small Grain Farmers

First year—Corn, followed by fall-sowed wheat.
Second year—Wheat with red clover sowed during February.
Third year—Red clover.

For Livestock and Dairy Farmers

First year—Corn with soy beans or cowpeas, fall-sowed wheat or oats.
Second year—Wheat or oats, followed by cowpeas or soy beans for hay, fall-sowed crimson clover.
Third year—Crimson clover, followed by ensilage and other corn; followed by fall-sowed oats and vetch.
Fourth year—Oats and vetch, slightly grazed, and later cut for hay; sweet potatoes, followed by crimson clover, rye or a combination of the two.

For Tobacco Farmers

For tobacco growers in this section a good rotation would be the one, or a modification of it, recommended for Eastern farmers desiring pasturage. Another one that may be used in many sections to good advantage is as follows:
First year—Tobacco, followed by fall-sowed oats or rye.
Second year—Oats or rye, followed by soy beans or cowpeas and crimson clover in the fall.
Third year—Corn, with soy beans and cowpeas, followed by fall-sowed rye.

III.—FOR UPPER PIEDMONT AND MOUNTAIN SECTION

For Corn and Small Grain Farmers Raising Livestock or not

First year—Corn, followed by fall-sowed wheat.
Second year—Wheat, with red clover sowed in wheat during February.
Third year—Red clover, with first crop cut for hay and last crop turned under for soil improvement.

In growing legumes mentioned in the rotations given above, lime in some form must usually be used in fairly liberal amounts, for without the use of this material, the legumes cannot ordinarily be expected to succeed on most of the soils of the state which have gotten in a sour or acid condition.—C. B. Williams, Chief of Agronomy, North Carolina Extension Service.

Acre Yields by States—1919

	Corn	Oats	Wheat	Hay	Peanuts	Sweet Potatoes
United States	28.6	29.4	12.8	1.62	26.6	100.7
Virginia	28.0	22.0	11.8	1.50	38.0	125.0
North Carolina	19.0	11.7	8.5	1.30	41.0	93.0
South Carolina	16.0	23.0	9.0	1.30	45.0	90.0
Georgia	14.5	20.0	10.5	1.10	25.0	92.0
Florida	15.0	19.0	....	....	27.0	100.0
Tennessee	23.0	23.0	9.0	1.40	35.0	110.0
Alabama	14.5	18.0	9.0	1.00	18.0	94.0
Mississippi	15.0	19.0	14.0	1.60	32.0	105.0
Louisiana	17.5	22.0	....	1.80	31.0	90.0
Texas	30.0	42.0	16.5	1.90	25.0	110.0
Oklahoma	24.0	33.0	14.0	2.20	32.0	120.0
Arkansas	18.0	22.0	9.5	1.40	35.0	100.0

Corn: Production and Exports, 1910-1920

Year	Area	Yield Per Acre	Production	‡Exports
	Acres	B'hels	Bushels	Bushels
1910	104,035,000	27.7	2,886,260,000	65,615,000
1911	105,825,000	23.9	2,531,488,000	41,797,000
1912	107,063,000	29.2	3,124,746,000	50,780,000
1913	105,820,000	23.1	2,446,988,000	10,726,000
1914	103,435,000	25.8	2,672,804,000	50,668,000
1910-1914 average	105,240,000	26.0	2,732,457,000	43,917,000
1915	106,197,000	28.2	2,994,793,000	39,897,000
1916	105,296,000	24.4	2,566,927,000	66,753,000
1917	116,730,000	26.3	3,065,233,000	43,073,000
1918	104,467,000	24.0	2,502,665,000	23,021,000
1919	102,075,000	28.6	2,917,450,000	.....
1915-1919 average	106,953,000	26.3	2,809,413,000	.....
1920	103,648,000	30.8	3,199,126,000	.....

†Years beginning July 1.

Peanuts: Production, Imports, and Exports, 1910-1920

	Area	Yield Per Acre	Production	Imports for Consumption	Exports
	Acres	B'hels	Bushels	Bushels	Bushels
1910	.....	....	.....	1,036,000	248,000
1911	.....	....	.....	789,000	269,000
1912	.....	....	.....	1,085,000	332,000
1913	.....	....	.....	2,274,000	366,000
1914	.....	....	.....	1,437,000	267,000
1910-1914 average	.....	....	.....	1,324,000	296,000
1915	.....	....	.....	1,783,000	394,000
1916	1,043,000	33.0	34,434,000	1,938,000	1,019,000
1917	1,842,000	28.5	52,505,000	4,978,000	568,000
1918	1,865,000	24.7	46,010,000	1,140,000	623,000
1919	1,251,000	26.6	33,263,000	.....	.....
1920	.....	....	37,499,000	.....	.....

Potatoes: Production, Imports, and Exports, 1910-1920

Year	Area	Yield Per Acre	Production	†Imports	‡Exports
	Acres	B'hels	Bushels	Bushels	Bushels
1910	3,720,000	93.8	349,032,000	219,000	2,384,000
1911	3,619,000	80.9	292,737,000	13,735,000	1,237,000
1912	3,711,000	113.4	420,647,000	337,000	2,028,000
1913	3,668,000	90.4	331,525,000	3,646,000	1,794,000
1914	3,711,000	110.5	409,921,000	271,000	3,135,000
1910-1914 average	3,686,000	97.9	360,772,000	3,642,000	2,116,000
1915	3,734,000	96.3	359,721,000	210,000	4,018,000
1916	3,565,000	80.5	285,953,000	3,079,000	2,489,000
1917	4,384,000	100.8	442,108,000	1,180,000	3,453,000
1918	4,295,000	95.9	411,860,000	3,534,000	3,689,000
1919	4,013,000	89.2	357,901,000	.....	.....
1915-1919 average	3,998,000	92.5	371,708,600	.....	.....
1920	3,849,000	109.0	421,252,000	.....	.....

†Years beginning July 1.

Sweet Potatoes: Production, Yield Per Acre, and Imports, 1910-1920

Year	*Area	Yield Per Acre	Production	†Imports for Consumption
	Acres	B'hels	Bushels	Bushels
1910	641,000	93.5	59,938,000	.....
1911	605,000	90.1	54,538,000	11,469
1912	583,000	95.2	55,479,000	6,350
1913	625,000	94.5	59,057,000	8,832
1914	603,000	93.8	56,574,000	9,509
1910-1914 average	611,000	93.5	57,117,000	9,040
1915	731,000	103.5	75,639,000	4,117
1916	774,000	91.7	70,955,000	6,434
1917	919,000	91.2	83,822,000	5,354
1918	940,000	93.5	87,924,000	90
1919	1,029,000	100.7	103,579,000	.....
1915-1919 average	878,600	96.1	84,383,800	.....
1920	1,022,000	103.0	105,676,000	.....

†Years beginning July 1.

Tobacco: Production, Imports, and Exports, 1910-1920

Year	Area	Yield Per Acre	Production	†Imports	‡Exports
	Acres	Pounds	Pounds	Pounds	
1910	1,366,000	807.7	1,103,415,000	48,203,000	355,327,000
1911	1,013,000	893.7	905,109,000	54,740,000	379,845,000
1912	1,226,000	785.5	962,850,000	67,977,000	418,797,000
1913	1,216,000	784.3	953,734,000	61,175,000	449,750,000
1914	1,224,000	845.7	1,034,679,000	45,809,000	348,346,000
1910-1914 average	1,209,000	820.5	991,958,000	55,581,000	390,413,000
1915	1,370,000	775.4	1,062,237,000	48,078,000	443,293,000
1916	1,413,000	816.0	1,153,278,000	49,105,000	411,599,000
1917	1,518,000	823.1	1,249,276,000	86,991,000	289,171,000
1918	1,647,000	873.7	1,439,071,000	83,951,000	629,520,000
1919	1,901,000	730.8	1,389,458,000	.....	.....
1915-1919 average	1,569,000	805.8	1,258,664,000	.....	.....
1920	1,859,700	793.0	1,476,444,000	.....	.....

†Years beginning July 1.

Saving Crimson Clover Seed

CRIMSON clover cannot be saved satisfactorily and clean seed obtained without considerable expense for machinery and a huller. A common method where such machinery is not available is to allow the clover to become ripe, cut it with a mower when it is a little bit damp, or in the early morning, and cure it with as little handling as possible. Then the heads are shattered with flails or by running them through an ordinary threshing machine, and the coarsest of the chaff removed by fanning. United States Department of Agriculture Farmers' Bulletin 646 describes the methods and gives illustrations of harvesting crimson clover seed. The above mentioned bulletin also contains a diagram of a seed stripper that can easily be made at home. This bulletin can be obtained by writing to the Department of Agriculture, Washington, D. C. Order bulletins by numbers.

To Inoculate Seed

COATING the seed of legumes with inoculated soil before planting is a simple method of insuring soil inoculation at slight cost. County agents have found ordinary furniture glue effective in holding particles of inoculated soil to the seeds. This method gives each individual seed some of the particles of inoculated soil which it carries with it when it is planted.

The scheme requires but a small amount of inoculated soil and costs but a few cents an acre. The method is described in Farmers' Bulletin 704 of the United States Department of Agriculture as follows:

Dissolve two handfuls of furniture glue for every gallon of boiling water and allow the solution to cool. Put the seed in a washtub and then sprinkle enough of the solution on the seed to moisten but not to wet it (one quart per bushel is sufficient) and stir the mixture thoroughly until all the seed are moistened.

Secure the inoculated soil from a place where the same kind of plants as the seed are growing, making sure that the roots have a vigorous development of nodules. Dry the soil in the shade, preferably in the barn or basement, and pulverize it thoroughly into a dust. Scatter this dust over the moistened seed, using from one-half to one gallon of dirt for each bushel of seed, mixing thoroughly until the seed no longer stick together. The seed are then ready to sow.

Don't throw away last year's "Reference Special" just because you have this year's. Much valuable information in our 1920 issue is not repeated this time.

How to Save Clover Seed

NO MATTER whether the clover is to be cut for hay or to be turned under for soil improvement, there are several devices that may be used for harvesting the seed. One of these is the clover stripper machine, which may be made by almost any farmer, and instructions about which can be obtained from the United States Department of Agriculture.

Another method is to attach a sheet of some kind to the cutter-bar, letting a person walk behind the back part of it so that the seed will not work off. Every few minutes the collected clover can be removed and the seed recovered on the sheet.

Another way is to cut the ripe clover when it is a little damp, put in a barn, and when thoroughly dry, fork over the hay, allowing the seed to sift down to the floor, where they may be recovered. Other methods are used, and will suggest themselves to the farmer who is interested in the matter. No farmer should let any seed whatever be wasted.—Extension Service.

Best Yielding Varieties of Farm Crops in North Carolina

IN THE following table Chief C. B. Williams, of the Division of Agronomy, has listed the best yielding varieties of farm crops for each section of North Carolina. This table is based on tests at the various North Carolina test farms. In each case the best yielding variety is named first, the second best, is named second, and so on down the list:

IN MOUNTAIN SECTION

Corn.—Southern Beauty, Parker's Prolific, Biggs' Seven-ear, Cross No. 182, Latham's Double.

Wheat.—Leap's Prolific and Bearded Fulcaster.

Oats.—Red Rust Proof and Burt.

Rye.—Abruzzi.

Sorghum.—Early Amber, Early Orange, Sugar Drip (in lower valleys).

Grasses.—Orchard, Red Top, Kentucky Blue, Timothy, and Meadow Fescue.

Soy Beans.—For seed, Mammoth Yellow, Haberlandt, Tar-heel Black. For hay, Tar-heel Black, Mammoth Yellow, Chiquita.

Cowpeas.—For seed, Groit, Early Red, New Era. For hay, Monetta, Iron, Brabham.

Legumes (Winter).—Red, Crimson and White clovers.

IN PIEDMONT SECTION

Corn.—Deaton's Two-ear, Biggs' Seven-ear, Williamson, Cross No. 182, Weekley's Improved, Latham's Double.

Cotton.—King No. 29, Mexican Big Boll, Cleveland Big Boll, Edgecombe-Cook.

(Cotton not grown in upper portion of Piedmont region)

Wheat.—Leap's Prolific, Purple Straw, Bearded Fulcaster.

Oats.—Fulghum, Appler, Red Rust Proof.

Sorghum.—Honey or Japanese Seeded Ribbon, Red Amber, Sugar Drip, and Goose-Neck.

Grasses.—Orchard, Red top, Timothy, Tall Oat, Kentucky Blue, Meadow Fescue.

Soy Beans.—For seed, Mammoth Yellow, Tar-heel Black, Mammoth Brown. For hay, Tar-heel Black, Chiquita, Mammoth Yellow.

Cowpeas.—For seed, Groit, Early Red, Whippoorwill. For hay, Wonderful, Monetta.

Legumes(Winter).—Red, White, and Crimson clovers, and Hairy vetch.

Tobacco.—For lighter soils, about same as for Coastal Plain.

For heavier soils, Narrow-leaf Oronoco Flanagan.

FOR COASTAL PLAIN SECTION

Corn.—Latham's Double, Biggs' Seven-ear, Weekley's Improved, Tom Green.

Cotton.—Mexican Big Boll, Lone Star, Cleveland Big Boll, and Edgecombe-Cook.

Oats.—Appler, Fulghum, Burt.

Rye.—Abruzzi.

Peanuts.—Spanish, Virginia, North Carolina Bunch, and Wilmington or North Carolina.

Tobacco.—Adcock, Warne, Yellow Pryor, White Stem Oronoco, Big Oronoco, Willow Leaf, Gooch, Tillery, Hester.

Sorghum.—Honey or Japanese Seeded Ribbon, Red Amber, and Goose-Neck.

Grasses.—Orchard, Red top, Bermuda, Rye, Tall Oat, and Meadow Fescue.

Soy Beans.—For seed, Mammoth Yellow, Virginia, Wilson Black. For hay, Mammoth Yellow, Tar-heel Black, Virginia.

Cowpeas.—For seed, Groit, Whippoorwill, Brabham. For hay, Brabham, Iron, Black Unknown.

Legumes (Winter).—Crimson and White clovers, and Hairy vetch.

Wheat and Oats Variety Tests in South Carolina

BELOW are given the yield results of variety tests of five varieties each of wheat and oats conducted on the Clemson College farm of the South Carolina Experiment Station.

Wheat.

Variety.	Bus. Per Acre.
Boggs	14.7
Leaps Prolific	12.8
Alabama Blue Stem	11.7
Dietz Mediterranean	11.7
Fulcaster	10.6

Oats.

Fulghum	35.6
Red Rust Proof	32.7
Red Appler	23.8
Hastings 100-1	23.4
Bancroft	19.4

(Concluded on page 27, column 3)

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Useful Facts on Farm Buildings and Machinery

Ten Rules for Care of Implements and Machinery

KEEP **the bolts tight.** The machine will not run long with loose bolts.

2. **Oil holes should always be kept open** and no dirt or grit should be allowed to get into any bearings. Someone has well said "Eternal vigilance and oil are the price of smooth-running, efficient farm tools."

3. **All wearing parts of all machines should be well lubricated** when in use. Many farmers seem to realize that automobiles and gasoline engines should be lubricated often, but forget the value of the best lubricating oil on the common, every-day field implements and machinery.

4. **The principal lubricants** are fluid oils and semi-solids, such as graphite. Light oils should be used on surfaces moving over each other at high speed; heavy oils and greases used where the pressure is great and the motion slow, as on wagon axles.

5. When through using an implement or machine in the field, it should be cleaned at once. Dirt and rust may be removed by the use of a scrape, kerosene, and old rags. **Iron parts should be greased** to prevent rust. This applies especially to **plows, harrows, cultivators, and drills.**

6. **For the iron parts,** kerosene and tallow or cheap axle grease are **preferable to paint** because it is rather difficult to remove paint from iron.

7. **Keep the wooden parts painted.** As a rule, it is advisable for the average farmer to use ready-mixed paints. However, if a farmer prefers to mix colors with oil, red lead and linseed oil make a mixture that adheres well to clean surfaces of wood and is affected about as little by the weather as more expensive mixtures.

8. **Rust is more destructive than wear,** and sunshine and rain are more destructive to the wooden parts than rust is to the iron parts. For these reasons, it is necessary to **keep machinery under shelter** when not in use.

9. Many implements and machines **should be taken to pieces at least once a year** for the purpose of thoroughly cleaning every part and especially all wearing parts and oil cups. This insures the discovery of badly worn and broken parts, makes it possible to thoroughly clean and oil every part, and—most important of all—makes a machine expert out of the farmer.

10. When a machine **finishes its work of the season** and is ready for the implement shed, or house, a record of the repairs needed should be made on a card and the card attached to it. **All necessary repair parts should be ordered** and the machines put in first class condition in a farm shop furnished with the necessary tools for repair work during dull seasons.

G. H. ALFORD.

Fifteen Winter Jobs: How Many Have You Completed?

REMOVE all stumps, logs and large rocks from your fields.

2. Terrace all hillsides and stop all gullies.

3. Drain all bottoms and swampy lands.

4. Repair all farm buildings and build any needed new ones.

5. Overhaul all farm machinery, putting up a tool shed if you haven't one already.

6. Install waterworks, or a heating plant, or a lighting system.

7. Paint or whitewash all buildings and fences.

8. Repair fences and if necessary enlarge pastures.

9. Rearrange fields and clean out any "corners" if so doing would make cultivation easier.

10. Arrange for raising more hogs and other livestock.

12. Build a woodshed and have it well filled with stove wood when the season of rush farm work begins.

13. Read five books relating to soils, crops, fertilizers, livestock, farm management, etc.

14. Read five books relating to coöperation and marketing, rural sociology, rural recreation, etc.

15. Help establish a local farmer's club and farm woman's club.

CONVENIENT IMPLEMENT SHED

"Will a Tractor, Shredder, or Binder Pay Me?"

WHAT acreage of land should a farmer be cultivating in order to justify the purchase of a tractor?"

Conditions vary so widely and the sort of work to be done enters so much into it that, no definite answer can be given to the question. Many 80-acre farmers who use the tractor for belt as well as for draw bar work, claim that the tractor is a splendid investment. Many other tractor owners claim that a farmer should cultivate 200 acres of comparatively level land to justify the purchase of a tractor.

"How many acres of row stuff, such as corn, cane, sorghum, Kafir, etc., should a man have to justify the purchase of a **row binder, a shredder?**"

Any farmer who has from 15 to 20 acres in row crops ought to have a row binder or harvester. It is very often better for two or three neighbors to jointly own and use the machine.

"How many acres of grain justify the purchase of **a grain binder?**"

Any farmer who has from 25 acres upwards of oats, wheat, rye, barley, etc., should have a binder. G. H. ALFORD.

Renting Farm Machinery: How to Estimate Costs

THE following items should be considered when figuring the proper charges for implements and machines hired out to neighbors.

1. Interest on original cost.
2. Depreciation.
3. Storage.
4. Insurance and taxes.

Suppose a disk harrow costs $100. The interest at 8 per cent is $8; depreciation (figuring life of harrow at five years) is $20; storage, insurance, taxes will probably amount to about $5 a year. The total cost is $33 a year. If the harrow is used on an average of 33 days a year, the rent charge should be at least $1 a day, plus a slight margin.

In a binder interest on a $200 investment is $16; depreciation, estimating life at ten years is $20, and storage, insurance and taxes $10 making a total of $46 a year. If the binder is used on an average of eight days each year, the rent charge should be at least $5.75 a day, plus a slight margin.

Silos: 10 Dairy Cows or 25 Beef Cattle to Make Silo Pay

IF TWO or three, or possibly as many as four or five, neighbors combine to buy a silage cutter and an engine; or if there is already on the farm an engine which is economically used for other purposes, which can also be used to drive the silage cutter, a silo will probably pay any successful farmer or dairyman who expects to feed 10 or more dairy cows or 25 head of other cattle for at least the next eight or ten years.

As many as 25 dairy cows and the young stock generally kept with that many milk cows, or 50 head of fattening beef cattle, or breeding stock may justify the building of a silo and provide the machinery to fill it. But, of course, when the engine necessary to drive the silage cutter can be used for other purposes, such as a tractor engine, for instance, then the number of cattle justifying a silo and silo-filling equipment is reduced accordingly.

DR. TAIT BUTLER.

TELL YOUR NEIGHBOR HOW YOU USE MACHINERY

Send Your Experience Letter for Our Implements and Machinery Special, of February 5.

IMPROVED implements and machinery are rapidly becoming essentials of the modern farm; yet there are many farmers who have not purchased any modern implements or machinery for the simple reason that they cannot operate them or see where they will prove practicable. If you want to be of help to your neighbor, tell him of your experiences through the columns of The Progressive Farmer.

The labor situation is such that the farmer will necessarily have to use improved methods of cultivation. If you are one of many farmers who have successfully used improved implements and machinery, tell us your experiences, make your letter not over 300 words, and get it to us not later than January 20.

Cash prizes of $7.50 for the best letter, $5 for the second, and $3 for the third, will be given. All other letters used will be paid for at space rates.

How to Control Insect Pests and Fungous Diseases

Worms and Grubs

Cutworms

THESE hatch from eggs of moths, usually laid in grassy or weedy lands. Becoming partly grown by fall, they grow slowly through winter, become more active and destructive in early spring, become grown and cease damage by the end of May.

Remedies.—Clean culture, plow under grass and weeds in late summer or fall. If not desirable to leave the ground bare through the winter, sow a cover crop after the plowing. Late planting or setting will avoid much cutworm damage.

Wire Worms

Hatch from eggs of "jack-snappers", laid in grassy fields. Worms live two or three years before becoming beetles.

Remedies.—Fall plowing (cover crop if desired); long rotations by which susceptible crops shall be at least two years removed from grass.

White Grubs

Hatch from eggs laid by brown May beetles, also green "June bugs" in grassy lands, especially manured lands.

Control much the same as for wire worms. Hogs will root for them, or poultry to follow the plow will destroy many.

Root Lice

Often destructive to cotton and sometimes corn, in restricted areas. Attended by ants which help them through winter.

Remedies.—Rapid shallow cultivation; nitrate of soda to stimulate rapid early growth; deep fall plowing of infested spots to scatter the ants. Avoid cotton and corn in continuous rotation.

Weevil

Important with all grains, beans, peas, etc.

Remedies.—Prompt threshing and tight storage and small grains; shucking of corn in field and separation of infested ears; clean bins. Beans and peas can be mixed with equal quantity dry dust lime for storing. To treat stored grain, place in air-tight bins, boxes, barrels or other containers and sprinkle carbon disulphide on top at the rate of 5 pounds to 1,000 cubic feet of space in the container, close tightly and leave closed for 24 hours. The material is highly inflammable and explosive, and no fire, lighted match, pipe, etc., should be brought near. If bin is not air-tight, use more of the disulphide.

Corn Insects

Bud Worm

THIS is the worm stage of the spotted melon beetle, worse on low grounds in cool, belated seasons.

Remedies.—Time of planting is important. Late planting will avoid some injury by this, as well as by cutworms and stalk-borers. Some farmers claim to avoid it by very early planting. Practice rotations. High lands are less infested. A liberal amount of seed may give stand in spite of bud-worm. Ample cultivation and liberal fertilization helps.

Stalk-borer

Two generations, both attacking early planted corn, only one attacking late-planted corn. Winters in base of corn stubble.

Remedies.—Planting after about May 25 will avoid large part of the damage in the latitude of the Upper South. Plowing out stubble so as to expose to changes of weather during winter will reduce the number to appear in spring. Practice rotations.

Ear-worm

Destructive everywhere, infesting ears, especially at the top. The same insect is called by other names when infesting other crops,—cotton boll-worm, tobacco bud-worm, tomato fruit-worm. It winters in the ground.

Remedies.—Fall and winter plowing, where badly infested crops have grown; pinching or cutting off tips in small garden patches; dusting young silks with mixture of equal parts of powdered arsenate of lead and dry lime in corn for table use. There is no really effective treatment in the field (other than plowing) for general crop corn. The measures mentioned are not as good as could be wished.

Cotton Insects

Leaf Louse

MORE destructive in cool seasons, causing distorted leaves, usually disappearing with hot weather in June.

Remedies.—Could be controlled by spraying with tobacco preparation known as "Black-Leaf-40", one part to 800 parts water, or by laundry soap in water at the rate of 1 pound to 4 gallons, but generally such treatments are impracticable. They are usually attacked by large numbers of lady beetles and parasites which control them before damage becomes wide-spread.

Red Spider

Causes a form of "rust", followed by shedding of leaves. Worse in long dry spells. Feeds on many plants, often starting from pokeweed.

Remedies.—Pluck the first affected leaves into an oil-soaked sack, take out of field and burn. Isolate infested section by taking out a few stalks ahead of infestation to check spread along row. Spray with ready-made lime-sulphur, 1 gallon to 60 gallons water. But the most important point in preventing red spider is to keep down all growth of pokeweed near cotton fields.

Boll-worm

Same insect as ear-worm in corn. Although the total damage by it to cotton is large, yet the damage per acre is seldom enough to justify spraying or dusting. Winter plowing as mentioned for ear-worm in corn will help.

Boll Weevil

Remedies consist of early planting of early varieties, hastened to maturity by ample use of quick acting fertilizers and abundant cultivation. Methods of poisoning recently developed are described in a Farmers' Bulletin of the United States Department of Agriculture.

Tobacco Insects

Flea Beetle

KNOWN to all tobacco growers.

Remedies.—Careful burning of all trash, leaves, etc., around seedbeds; tight screening of beds. Spray plants in bed with powdered arsenate of lead, 1 pound to 50 gallons of water.

Horn-worm

Known to all tobacco growers.

Remedies.—Hand-picking. Dust with 1 pound powdered arsenate of lead to 6 pounds dust lime, or spray, 1 pound to 30 gallons of water.

To Prevent Weevils in Grain

AGAINST weevils infesting stored grain and corn, carbon disulphide is effective at the rate of 5 pounds for each 1,000 cubic feet, provided the application is made while the temperature is not below 65 degrees Fahrenheit. Make the bins as tight as possible, and after sprinkling the liquid over the grain, cover tightly with gas-proof tarpaulin. Let the fumigation continue for at least 24 hours. —Farm and Garden Rule Book.

Dry Formaldehyde Method for Treating Oats

THE dry formaldehyde method has been used for several years in treating oats. In most cases the smut has been almost completely eliminated and in no case has there been reported any injury to the germination when the directions were followed. This method is much easier than the old sprinkling methods.

For treating 50 bushels of oats, one pint of formaldehyde is mixed with a pint of water in a quart hand-sprayer. The grain is cleaned and piled on a clean barn floor. One man shovels the oats over into a new pile while a second man handles the sprayer, giving about two strokes of the handle for each shovelful of grain and throwing the mist beneath the falling grain. When all the grain has been treated in this way, the pile is covered over with clean canvas or blankets for four or five hours. When this time is up, the oats should be uncovered and spread out in order to allow the formaldehyde fumes to escape.

Oats may be sowed at once or, if thoroughly aired, may be sacked and kept for several weeks before being sowed.

How to Make Self-boiled Lime-Sulphur

SULPHUR 8 pounds, lime 8 pounds, water 50 gallons. Add enough water to start slaking; next add the sulphur, having no lumps, and add enough water to continue slaking. Stir constantly and as soon as the vigorous boiling is over (2 to 15 minutes) add cold water and stop the process. Dilute with water, strain and add up to 50 gallons of water. It is then ready to apply. Hydrated lime may be substituted for fresh stone lime. In such case, cook by using 8 gallons of boiling water.

How to Make Bordeaux Mixture

FOLLOWING is the method of making Bordeaux mixture at home: Take four pounds of bluestone and put it in a sack, and suspend the sack in a tub or other convenient vessel, which vessel should contain as many gallons of water as there are pounds of bluestone. In other words, if you are dissolving four pounds of bluestone put it in a vessel containing four gallons of water; if you are dissolving three pounds, put it in three gallons. Use a wooden vessel, as when it is put into a tin or other metal vessel, some chemical action takes place between the metal and the bluestone.

Suspend Bluestone in Water.—Suspend this sack containing the bluestone in such way that the bluestone is barely covered by water. Put it in late some afternoon and allow it to remain in water during the night, and it should all be dissolved by morning. If the bluestone is thrown down in the bottom of the water, it will dissolve very slowly, but by suspending it, it will dissolve much more rapidly. This gives a stock solution that can be kept and used as needed. However, it should be kept in a wooden vessel and carefully covered.

To Make 50 Gallons of Bordeaux Mixture.—When ready to make up 50 gallons of the Bordeaux mixture, take 5 pounds of rock lime and slake it by adding enough water to complete the slaking, and make a thin paste. Then pour into the barrel or other container where the spray mixture is being made, 25 or 30 gallons of water; then pour in the solution obtained by slaking the 5 pounds of rock lime. Then add 4 gallons from stock solution of bluestone. Stir thoroughly and you are ready for spraying.

Mixtures for Small Sprayings

ARSENATE of lead, (for eating insects), using the usual strength of the solution: For 10 gallons of water use 1 teaspoonful, if in the paste form, if in powder form, use 1½ teaspoonfuls.

Paris green. For 10 gallons water use ½ teaspoonful.

Nicotine Sulphate, or Black Leaf No. 40, (for sucking insects). For 10 gallons water use 1½ teaspoonfuls.

Fish Oil Soap. For 10 gallons water use 4 ounces.

Lime Sulphur: (1½-50). For 10 gallons water use 1¼ quarts.

Bordeaux. (Its usual strength, 5-5-50). For 10 gallons water use one pound bluestone and 1 pound stone lime. This should be dissolved separately in the usual way.

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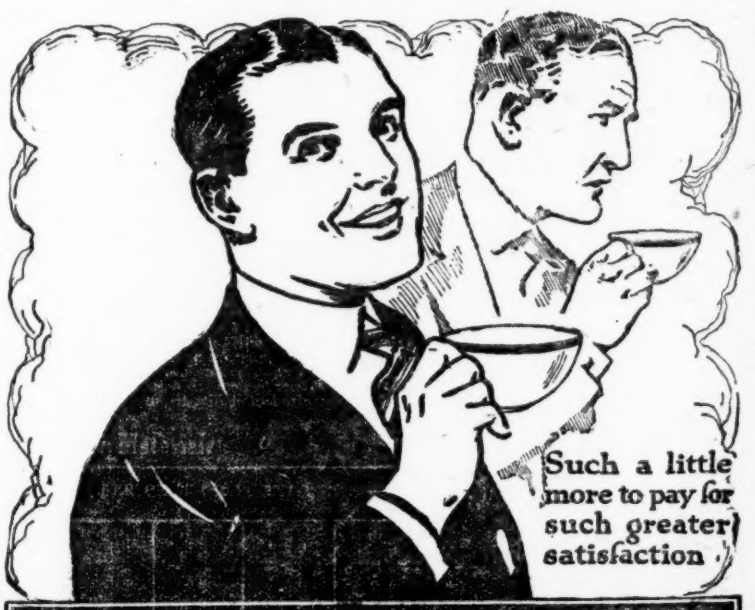

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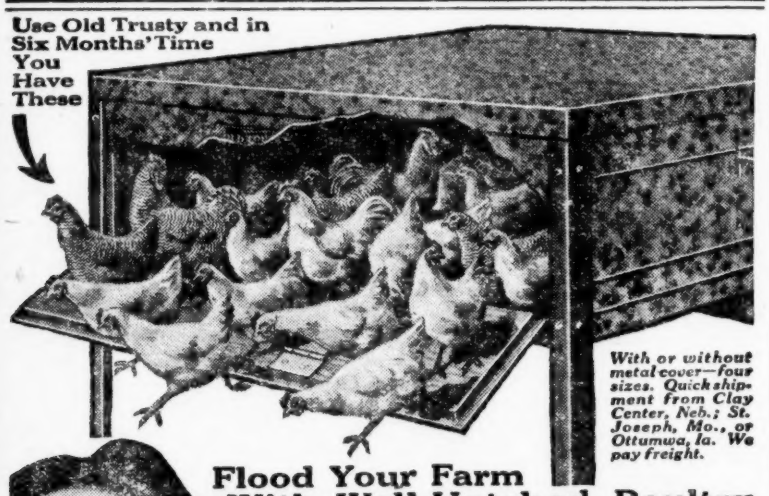

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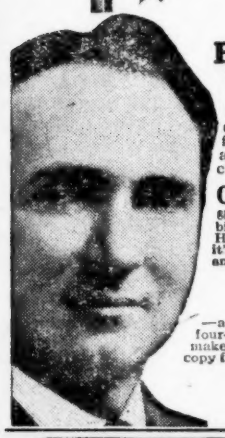

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Poultry Raisers' Pointers

Preservation of Eggs in Water Glass

DIRECTIONS.—If commercial water glass solution is to be used, mix 1½ quarts with 18 quarts of pure water; water that has been boiled is preferable. Stir the mixture until the ingredients are thoroughly mixed. A stone jar is the most suitable vessel for the mixture. Two eight-gallon jars are sufficient for 30 dozen eggs, using the amount of solution just prescribed. After the water glass is thoroughly mixed, pour it into the vessels to be used, being sure that the vessels are absolutely clean. Place the eggs in the water glass, see that those at the top are submerged under at least two inches of the liquid, and cover the jars in order to prevent evaporation. Put the jars in a cool place where they will be undisturbed during the year.

Suggestions.—Preserve only absolutely fresh eggs; stale eggs will not keep in any preservative. Have your preservative ready to receive the fresh eggs as you get them. If there is any doubt as to the freshness of the eggs, candle them, or see whether they sink when placed in a dish of fresh water. If an egg sinks, it is reasonably fresh.

Do not preserve dirty eggs or eggs that have been washed. Washed eggs will not keep because the protective gelatinous coating has been removed by the washing; and dirty eggs will become tainted in flavor.

Do not use the same liquid preservative more than one year.

Use spring eggs; they will keep better than summer or fall eggs.

Use infertile eggs rather than fertile eggs for preserving.

Do not leave eggs in the preservative longer than one year.

Rinse the eggs with water, after removing them from the preservative.

Eggs that are in good condition when removed from the water glass solution will usually remain good for at least two weeks.

If it is desired to boil eggs preserved in the water glass, pick a small hole through the large end of the shell before placing them in the water. The pores of the shell have been sealed by the water glass solution, and without the pinhole the expanding air within the shell would burst it.—Cornell College of Agriculture.

Insect Pests of Poultry

LICE.—About seven kinds are more or less common on poultry. Two of the most common are:

1. **Head Lice,** principally on chicks. For these apply a small quantity of lard or vaseline on head and throat.

2. **Body and Feather Lice.**—These are usually on any size of fowl after feathers are grown. For normal fowls, any age, sodium flouride is best. Use dip method in warm weather or where fowls can dry off in warm room. In cold weather or for ailing fowls use the pinch method.

Blue ointment is advocated by some, a small portion rubbed on skin in parts most affected. Under wings, inside thighs, around vent. Use with caution. Insect powders, if thoroughly applied, will destroy lice, but not eggs. Application must be renewed every ten days to two weeks.

Dust baths help. Should be thoroughly dry **dust,** not sand—well powdered tobacco dust improves it much.

Mites.—These pests breed and live mostly in cracks and crannies in woodwork, many on lower side of roosts, dropping boards and nests. They sally out at night to prey on poultry on roosts, and at any time on laying or setting hens. Main remedies: Spraying with carbolineum, kerosene oil or cresol. Hot whitewash containing kerosene, carbolineum or cresol, thoroughly applied is very effective. When a spray pump is available it will force the wash into cracks a brush would miss. Fumigating with sulphur candles, in case of a building with tight walls and roof will be very effective.

Fleas, or Stick-tights, are found mostly on the head of fowls but breed in woodwork. They are not troublesome in the northern part of Southern states, but near the coasts, are bad. Greasing head and other parts of body attacked is the best remedy. They dislike moisture and scattering fine salt, or spraying with a strong salt sodium will drive them off.

Fowl Tick or Blue-bug.—These are found only in the extreme South, and are nearly as large as bed-bugs. They are a serious trouble. To control, fumigate, after removing and burning all litter, etc. Remove poultry to new quarters for six to eight days. Give the most thorough spraying and whitewashing possible: Brood coops, brooders, and houses best treated with boiling water.

Red-bug or Chigger.—These breed on grass and weeds, and attack fowls allowed to range at will in woods and uncultivated ground. Close cutting of all grasses and weeds helps control them. When found on poultry, treat the sore places with lard or vaseline containing sulphur. Dust with flowers of sulphur as preventive. Real safety lies in keeping fowls in cultivated runs.

Examine all fowls regularly. Renew treatments every two weeks, **on suspicion,** but apply at once if there are indications of renewed attacks.

Poultry Diseases

ALL diseased birds should be isolated.

Colds and Roup.—Disinfect the drinking water as follows: To each gallon of water add the amount of potassium permanganate that will remain on the surface of a dime.

Canker.—Sprinkle a little flowers of sulphur in the mouth and throat of the bird, and put some chlorate of potash in the water. Also carefully remove the exudate with the aid of warm water and apply a 2 per cent solution of creolin to the diseased tissue.

Chicken Pox.—Apply a touch of iodine and carbolated vaseline to each sore.

Gapes.—New ground or vigorous cultivation of the runs with lime will often remedy this trouble.

Scaly Legs.—Apply vaseline containing 2 per cent of creolin to the affected parts, and after 24 hours soak in warm soapy water. Repeat treatment until cured.

Diarrhea in Hens.—Low grade wheat flour or middlings is good for this trouble. Also give teaspoonful of castor oil containing five drops of oil of turpentine to each fowl.

Bowel Trouble in Chicks.—Well boiled rice mixed with a little charcoal will often check this complaint. Dissolve 15 grains of crude catechu in each gallon of drinking water.—Farmers' Bulletin No. 528.

Feeds for Young Chicks

FOR the first 48 hours give no feed at all. Buttermilk should be supplied from the first. It is generally believed to act as a preventive of white diarrhea. Sour milk is, by some, thought equally effective. Give in founts or small pans so protected that the chicks cannot get into it or soil it.

For first feed: Dried bread crumbs and hard boiled eggs ground fine, shells and all, moistened with milk. Pin-head oatmeal can be used instead of bread crumbs. When moistened with milk squeeze out most of it, let feed be crumbly. Never mix more at one time than can be used at one feed.

Give this mash feed for two or three days. Then begin scratch feed. Fine cracked corn, cracked wheat, and hulled oats with rape, milled or broken rice, in very small quantity, say one-twentieth.

Following are rations used at different Experiment Stations:

I.

Scratch Feed	Lbs.	Mash	Lbs.
Cracked corn	10	Wheat bran	10
Cracked wheat	10	Wheat middlings	10
Hulled or chipped oats	10	Corn meal	5
		Meat scrap	5
		Charcoal	2.5

With buttermilk or sour milk.

II.

Scratch	Lbs.	Mash	Lbs.
Wheat	20	Wheat bran	3
Steel cut oats	15	Middlings	2
Kafir	7	Oatmeal	1
Cracked corn	6	Corn meal	1
Grit	10	Bone and meat meal	¾
Charcoal	5	Charcoal	¼
Bone meal	5	Salt	

III

Scratch	Lbs.	Mash	Lbs.
Wheat	3	Bran	4
Cracked corn	2	Middlings	3
Hulled oats	1	Corn meal	3
		Best beef scrap	3
		Bone meal	1

Grit, oyster shell, fine cut bone and charcoal with all mashes.

Balanced Feeds for Poultry

A BALANCED ration for poultry should approximate one part of protein to five parts of carbohydrates. Proteins (nitrogen) mainly build the fowl's frame and muscles, and the white and a third of the yolk of egg. Carbohydrates supply fat and heat.

Feeds for young, growing fowls, and for breeding fowls should be of a narrow ration, one of protein to four of carbohydrates, while a wide ration, (six to one) is better for fattening fowls.

The rations adopted in different sections vary somewhat, according to the availability of different grains in different sections. Following are some:

I

Grains	Lbs.	Mash	Lbs.
Corn cracked	300	Wheat bran	150
Clipped oats	120	Wheat middlings	100
Wheat, hard	100	Ground oats	100
Kafir or buckwheat	30	Gluten feed	100
Sunflower seed	30	Corn meal	100
Coarse beef scrap	20	Beef or fish scrap	100
		Salt	.04

II

Grains	Lbs.	Mash	Lbs.
Cracked corn	10	Wheat bran	50
Wheat	10	Middlings	50
Oats	5	Meat scrap	35
		Salt, 1 per cent.	

III

Grains	Lbs.	Mash	Lbs.
Corn	60	Wheat bran	200
Wheat	60	Corn meal	100
Heavy oats	40	Gluten feed	100
Barley	20	Ground oats	100
Kafir and buckwheat	20	Wheat middlings	75
		Red Dog flour	25
		Fine beef scrap	60
		Salt	5

IV

Grains	Lbs.	Mash	Lbs.
Wheat	100	Wheat bran	100
Cracked corn	100	Wheat middlings	100
		Corn meal	100
		Ground oats	100
		Fish and beef scrap	100
		Salt	5

Useful Orchard and Garden Facts

Varieties of Fruit That Should Succeed in the South

Varieties Recommended for the Upper South:

Apples, Early Varieties.—Yellow Transparent, Red June, Early Harvest, Horse, Maiden Blush, Wealthy. Mid-season—Kinnard, Bonum, Grimes, Delicious. Winter—York Imperial, White Pippin, Home Beauty, Royal Limbertwig, Winesap, Stayman Winesap.

Pears.—Keiffer, Seckel and Bartlett.

Peaches.—Named in order of ripening: Mayflower, Greensboro, Arp Beauty, Carman, Hiley, Belle of Georgia, Elberta, Late Crawford, Chairs, Smock, Salway.

Plums.—Native Varieties—America, Munson, Wild Goose. European varieties—Green Gage, Purple Damson, Shropshire Damson. Japanese varieties—Red June, Burbank, Abundance.

Cherries.—Sour varieties—English Morello, Montmorency, Richmond. Sweet varieties—Tartarian, Windsor, Spanish.

Raspberries. — Black variety — Cumberland, Red variety—Cuthbert. Yellow variety—Golden Queen. Purple variety—Columbian.

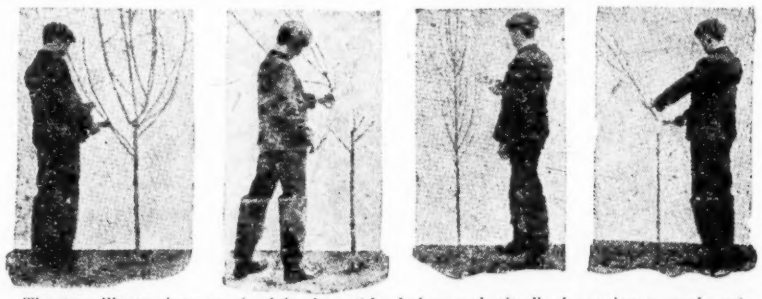
Blackberries.—Early Harvest, Eldorado.

Dewberries.—Lucretia.

Grapes.—White variety—White Niagara. Red varieties—Brighton, Delaware, Lutie, Catawba. Black varieties—Concord, Moore, Worden and Ives.

Quinces.—Angers, Champion, Meech, Orange.

Figs.—Brown Turkey, Celeste, and Ischia.



The two illustrations to the left show "the before and after" of pruning a newly set, two-year-old apple tree. The two at the right show a newly set, one-year-old peach tree, before and after pruning. These two illustrations show exactly how to prune both large and small fruit trees immediately after setting. A small apple tree should be pruned just like the peach tree shown above.

Showing the right and the wrong way of setting fruit trees. On the left the tree is not set deep enough, and the second one from the left is set too deep. The third one from the left shows the bad effects of bunching up the roots and setting the tree in too small a hole. At the right the tree is properly set as to depth and the way the roots are spread out.

Scuppernong Grapes.—Scuppernong, Thomas (reddish purple), Black Misch, James, Flowers, Eden and Memory.

Mulberries.—These should be planted for the hogs and chickens, but ripening quite early in season are not distasteful to eat; Hick's Everbearing, Black English and Browning.

Pecans.—Delmas, Frotscher, Money-maker, Schley, Stuart, Van Deman—for the lower part of the Middle South. Indiana and Mantura—for the upper part of the Middle South.

Pomegranate.—The pomegranate can be grown in the lower part of the Middle South.

Varieties of Fruit Recommended for the Middle South

Apples. — Early varieties — Red Astrachan, Horse, Yellow Transparent, Red June, Early Harvest, Bledsoe, May (very early), Williams. Mid season—Bonum, Kinnard, Delicious, Grimes, Virginia Beauty. Winter—Winesap, Yates, Terry, Jonathan, Stayman Winesap, York Imperial.

Pears.—Keiffer, Early Harvest, Le Conte, Seckel.

Peaches.—Early to late summer and even into the fall in order of ripening—Mayflower, Sneed, Greensboro, Redbird, Carman, Hiley, Belle of Georgia, Elberta, Late Crawford, Munson Free, Eaton's Gold, Salway, Stinson and Gladstone.

Plums.—The same varieties as planted in the Upper South should be used.

Cherries.—Only sour varieties should be planted: English Morello, May Duke, Richmond, Montmorency and Baldwin.

Raspberries. — Cumberland, Gregg (both black); Cuthbert, St. Regis (both red).

Blackberries.—Early Harvest, Eldorado, Wilson.

Dewberries.—Lucretia.

White Grapes.—Niagara, Diamond.

Red Grapes.—Lutie, Agawam, Catawba, Brighton, Delaware.

Black Grapes.—Concord, Carman, Moore's Early, Campbell's Early and Worden.

Persimmons.—Japanese.

Varieties of Fruit Recommended for the Lower South

Apples.—For the Lower South, apples do not do well as a rule. However, the following varieties will be the best to depend on: Horse, Early Harvest, Red June, Yellow Transparent, Kinnard, Terry and Fanny.

Pears.—Keiffer, Le Conte, Garber.

Peaches.—Florida Gem, Honey, Jewel, Waldo, Angel, Imperial, Pollas, Climax, Japan Dwarf, Colon, Cobbler, Onderdonk, Estelle, Hall Yellow, Dorothy.

Cherries.—Will not grow satisfactorily in the Lower South.

Persimmons.—Japanese persimmons are at home, of course, in this section. The most largely planted varieties, Tanenashi, Eureka (hardy variety), Zengi (early variety). Castata and Ormond are late varieties.

Scuppernong Grapes.—Scuppernong, Thomas (reddish purple). Black Misch, James, Flowers, Eden and Memory.

Mulberries.—These should be planted for the hogs and chickens, but ripening quite early in season are not distasteful to eat; Hick's Everbearing, Black English and Browning.

Pecans.—Delmas, Frotscher, Money-maker, Schley, Stuart, Van Deman—for the lower part of the Middle South. Indiana and Mantura—for the upper part of the Middle South.

Pomegranate.—The pomegranate can be grown in the lower part of the Middle South.

Quinces.—Angers, Champion, Meech and Orange.

Figs.—Celeste, Brown Turkey, Brunswick, Ischia, Magnolia, Lemon. Magnolia is grown very little except in southern Texas, but is the leading variety of that section.

Grapes.—White grapes—Wapanuka, Krause, Niagara, Hidalgo. Red varieties—Brighton, Valhallah, Captivator, Agawam. Black varieties—Carman, Cloeta, Champenel and R. W. Munson.

Scuppernongs, Raspberries, Dewberries, Mulberries, Blackberries.—All varieties suitable for the Middle South will prove satisfactory in the Lower South.

Walnut.—In both sections of the Lower South the English walnut can be planted to a limited extent.

Orange.—The Satsuma orange will do well in the upper part of the Lower South. It grows well in the vicinity around Mobile, in northern Florida, portions of Louisiana and Texas. Of course, no attempt is made in this article to give a general list of the citrus fruits that are suitable for the lower South.

Fertilizing Fruit Trees

USE Commercial Fertilizer.—It will be found profitable to give an annual application of commercial fertilizer to fruit trees and an occasional application of stable manure, once every three to five years. If the ground on which the fruit trees are growing is already quite rich, then application of stable manure will not be needed so often, but if it is poor, or medium poor, an application of manure every year, or until the trees are well started, will be profitable. In applying this, it will be desirable to scatter it broadcast and build up the fertility of the land, not only immediately around the trees, but of the whole surface.

Use Stable Manure Also.—In addition to building up the soil by application of stable manure, one can use to advantage the scrapings from the fence corners about the lot, yard, etc. Just scrape up and scatter broadcast in the orchard any time during the winter, and plow under at the first plowing in the spring. On the average farm where only a small orchard of a few acres is to be fertilized this way, there will be plenty of scrapings from about the house, wood shed, barn, etc., to keep the orchard in good condition.

Grow Leguminous Crops in Orchard.—In addition to applying stable manure, scrapings, etc., to the orchard, the general fertility of the soil can be added to, by growing both summer and winter legumes in the orchard. By cultivating the orchard until mid-summer, and then planting cow-peas or soy beans, much fertility will be added to the soil by these crops. After they are harvested in the fall, sow down to some kind of clover, either crimson (or in some sections red clover), and let these grow during the winter. Then turn under in early spring. By practicing this method a few years, the general fertility of the soil will be very greatly enhanced, especially in nitrogen, which is the most costly form of fertilizer.

Much Nitrogen Needed.—If the orchard has been liberally fertilized with stable manure, then a commercial fertilizer with a comparatively small amount of nitrogen and with a comparatively large amount of phosphoric acid and potash should be used. In a case of this kind, we should say that a fertilizer analyzing around 10-1-4 would be about right. However, if the ground is not rich in nitrogen, then considerably more nitrogen should be had in the commercial fertilizer, and one analyzing around 10-4-4, or 10-3-4, would be about right.

Top-dress in Spring.—In addition to giving a liberal application of the complete fertilizer early in the spring, an application of nitrate of soda or sulphate of ammonia given in late spring, just as growth is becoming rapid, will prove highly desirable and profitable as a rule.

Time to Apply Fertilizer.—The proper time to apply the complete commercial fertilizer is very early in the spring when the first cultivation is given. This should be usually about the time the buds begin to swell in the spring. Use this commercial fertilizer by scattering it broadcast around the tree and cultivating it in. Don't try to scatter it over the whole ground, but merely in a circle about the tree, commencing from two to six or eight feet from the base of the trunk of the tree and scattering it outward to a distance of several feet beyond the spread of the branches.

Where to Apply Fertilizer.—Keep in mind that the feed roots of the fruit trees are not right near the base of the trunk of the tree, and it is only wasting the fertilizer to put it there. Scatter it in this circle, going out several feet beyond the spread of the branches and cultivate it in. Of course, the larger the tree, the greater the distance beyond the spread of the branches the fertilizer should be applied.

Amount of Fertilizer Needed Varies With Age of Trees.—Usually a pound and a half or two pounds of commercial fertilizer will be enough to apply to each tree annually during the first two years. It should be gradually increased until five, six, or eight to ten pounds to the tree are given the older and larger trees. In addition to this, nitrate of soda or sulphate of ammonia given later in the spring should be applied at about one-fourth or one-fifth the rate of the amount of the complete commercial fertilizer. The fertilizer given to the young fruit trees before they reach the bearing age should contain a heavy proportion of nitrogen and a limited amount of phosphoric acid and potash. Then as the fruit trees commence bearing, as a rule it will pay well to decrease the proportion of nitrogen and increase the proportion of phosphoric acid and potash.

Change Proportion as Trees Mature.—Roughly speaking, while the trees are young, and before they reach the bearing age, the fertilizer containing only 5 to 6 per cent of phosphoric acid and 1 or 2 per cent of potash, and 6 or 7 per cent of nitrogen should be used, because it is at this time that the principal thing desired is growth in the trees; and because of the fact that nitrogen is the part of the fertilizer that produces the growth, this substance should naturally predominate. Also, when the tree reaches the bearing age, it is equally important to reduce the amount of nitrogen in order to prevent too rapid growth and to increase the amount of phosphoric acid and potash, in order to produce the proper amount of fruit, give it the right color, etc.

Suggestions for Setting Out Young Trees

SET the young trees out in a permanent place just as soon as received to prevent their drying out.

2. If you cannot find time to set them out immediately, then "heeling in" will prevent their drying out. This is done by digging a ditch 2 feet wide and about 1 1-2 feet deep and spreading the trees thinly in the trench. Then fill in with loose dirt to about 6 inches above the point where they stood in the nursery. Trees treated in this manner will keep for several weeks without injury.

3. Young trees should be set out about two inches deeper than they stood in the nursery row. The holes should be dug deep and broad enough to allow the natural spread of the roots.

4. The roots should be pruned to about 8 or 10 inches in length. All broken and diseased roots should be removed.

5. The tops of the young trees should be pruned when they are set out. If they are one year old and have no side limbs, simply cut the tops back to make them branch at the proper height. The peach trees are cut back to 18 inches and apple trees to 24 inches when they are set out.

6. It is a good idea to mix the top soil with 1-2 pound of an 8-4-2 commercial fertilizer, and put this around the roots of the trees.

7. In planting the trees always put some of the top soil in the hole before the tree is set. After the tree has been placed, throw the soil in, being sure to pack the soil firm about the roots.

8. About 2 inches of manure as a mulch applied at the base of the young tree will help considerably.

Trees handled in this manner should give good results.—Clemson College Bulletin.

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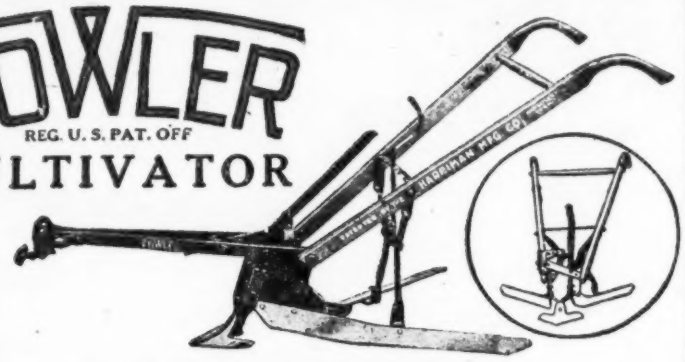

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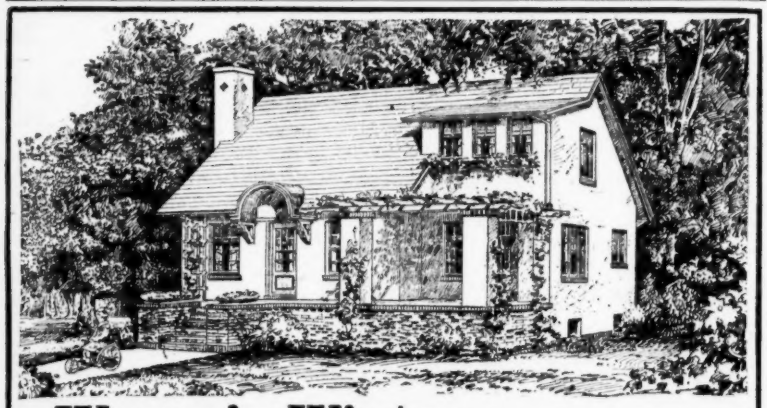

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Veterinary Problems

Milk Fever

(Parturient Paresis or Parturient Apoplexy)

MILK fever or a form of paralysis following calving (parturient paresis or parturient apoplexy) is not uncommon in heavy milking cows, with their third to sixth calf. It usually occurs within a few hours to one or two days after calving. The more quickly it makes its appearance after calving usually the more severe the attack.

The symptoms develop quickly, perhaps the first one noticed may be marked lessening of the milk flow or a wobbling of the hind parts. This loss of control may increase until the animal goes down unable to stand. If the cow lies on her breast, which she will usually do at first, the head is thrown around on her shoulder in a characteristic position. As the symptoms develop the cow may throw herself flat on her side and generally more or less complete unconsciousness to surroundings occurs. Heavy breathing, or a snoring like noise in breathing is not uncommon. Without treatment the severe cases generally die in from a few hours up to 24 or 36 hours.

Treatment.—The exact cause of milk fever is not known, but a very effective treatment has been discovered. If the udder can be thoroughly distended by pumping air into it and this is done rather early in the disease recovery is almost always certain. The air may be pumped into the udder with an ordinary milk tube and a bicycle pump, or perhaps by holding the opening of the teat against the pump tube without the use of a tube, but care must be taken to have the end of the teat and milk tube thoroughly clean and that the air drawn into the bicycle pump is far enough from the floor of the stable to prevent sucking up dust. These ends may be obtained by thoroughly washing the teat, especially the opening at the end, with some disinfectant solution, like some of the coal tar disinfectants mixed with water that has been boiled and allowed to cool. It is also best to milk a few streams while the washing of the teat is being done. The udder should be pumped full of air so that it is well distended, having the appearance of the udder of the fresh cow before milking. It is important that no attempt be made to give a cow medicine while suffering from this trouble, or at least no medicine should be given after she gets down or shows symptoms of paralysis. The cow should be kept lying on her breast when down, instead of flat on her side. This can often be done by packing sacks stuffed with straw against the shoulder on the opposite side to which the head is resting. These precautions are to avoid anything passing into the lungs and causing death immediately or later developing pneumonia. To prevent this trouble many dairymen now avoid milking the udder out more than just enough to prevent too great fullness and inflammation, for the first two or three days after calving.

Ringworm

FOR treatment of ringworm use a scrubbing brush, warm water and tar soap freely. Then apply to the affected surfaces equal parts of tincture of iodine and tincture of iron. For two or three days the application may be made once a day, but after that one application every two or three days is sufficient.

Fairly good results may also be had from using the coal-tar disinfectants such as Kreso or Zenoleum, full strength, on these scaly patches, applying once a day for several days. A solution of these disinfectants —one part of the disinfectant to 50 parts of water—should also be applied to all parts of the inside of the stables.

Hogs "Down in the Back"

ANIMALS which are fed on balanced rations, seem to be less liable to the disease. Hogs having good pasture, where they get plenty of exercise and are fed enough to keep them strong and growing seldom suffer. No medicine will be found entirely satisfactory after the paralysis occurs.

The animal should be kept in a pen by itself, where it cannot be disturbed by other animals, and fed on green feeds, skim milk and a mixture of corn, shorts and other suitable feeds.

Sometimes we have thought we obtained some benefit by giving about five grains of iodide of potassium and 10 drops of tincture of nux vomica to every 100 pounds of the hog's weight, two or three times a day in the feed. Since present day knowledge seems to indicate that a lack of mineral matter may play an important part in causing the trouble, charcoal and hardwood ashes or acid phosphate should be kept before the hogs.

Calciden (Abbots), a combination of calcium and iodine, is highly recommended. For hogs a 5-grain tablet is advised. Six of these tablets or one 30-grain tablet may be made up into a solution by adding an ounce of water, giving two tablespoonfuls twice a day.

To Free Hogs From Lice

TO FREE hogs from lice they should be dipped two or more times at intervals of about two weeks. Several dippings may be required before complete eradication is accomplished. Do not fail at the same time to clean and disinfect thoroughly the sleeping quarters. Creosol compound may be used for dipping and disinfecting. For dipping, mix in the proportion of 2 gallons to 100 gallons of water. For disinfecting, in the proportion of 3 gallons to 100 gallons of water. Although not always as effective as might be desired, coal-tar products of the kind ordinarily sold as stock dips are commonly used to treat hogs for lice. For use they are diluted with water in accordance with directions supplied by the manufacturer. A dipping vat is very useful wherever a large number of hogs are kept.—Florida Agricultural College.

Inoculating Hogs: Single and Double Treatment

IN INOCULATING hogs against cholera, the term "double treatment" means that the hogs are injected with anti-cholera serum and at the same time, preferably on the opposite side of the body, they are also injected with infected blood, or the blood from an infected or cholera hog. This double treatment is sometimes called the "simultaneous inoculation." The "single treatment" or "serum alone inoculation," means that only the anti-cholera serum is injected. When the single treatment is used the hogs are protected only for from two to three weeks up to six or eight weeks, while the double treatment generally gives immunity or protection for life, as does a case of cholera from which the hog recovers.

Remedy for Pig-eating Sow

THE remedy is easy: See that the sow gets plenty of exercise, keep the bowels open, preferably with green feed and a balanced ration, in order that the sow may get all the materials which her own body and the bodies of her unborn pigs need to maintain healthy and proper growth. Possibly protein from animal matter is better for this purpose but any protein that the hogs like will do about as well. At any rate, tankage fills this need exactly. If one part of tankage by weight is mixed with 6 to 8 parts of corn or any grain for two weeks before the pigs are born there is very little danger of the sow's eating them. Skim milk will serve the same purpose and is probably just as good as the tankage. In fact we believe a good clover pasture will serve the purpose equally as well.

Scours in Calves

SCOURS in calves is almost always due to faulty feeding. Too much milk, milk which is sour, or fed in unclean pails, or milk fed cold when a calf is accustomed to warm milk are the common causes. The only way to effect a cure is to cut down the feed to much less than you think the calf ought to have, feeding this small quantity for a week or ten days and then slowly and gradually increasing the quantity. This milk should be fed at the same temperature each time and should be fed in clean buckets. Some benefits may be derived from giving the calf one tablespoonful of lime water in its milk twice a day. Lime water may be made by putting a lump of stone lime in water and after it is settled using the clear top liquid. Thirty grains of subnitrate of bismuth given once or twice a day for a few days might also be beneficial. This can be put on the tongue with a large spoon and the animal's head held up for a few seconds, until it is swallowed.

Warbles or Grubs in the Back of Cattle

SOME advise the introduction of any material into the back, or the cavity occupied by the grub, that will kill it. Even when the hole is small any substance like kerosene can be introduced by means of a small oil can; but we do not advise this mode of treatment. When the grubs are killed and left in the back we believe the results are worse than when the live grubs are allowed to remain there.

A better plan is to slightly enlarge the small opening in the skin with a sharp knife, squeeze out the grub and destroy it. It is also a good plan to fill the cavity formerly occupied by the grub with powdered boracic acid.

Scratches

THE term "Scratches" is applied to quite a wide range of conditions and the extent of the disease determines quite largely the nature of the treatment. In a general way we may state that scratches is usually due to the animal's standing in a wet, muddy, filthy lot or stable. The first step in treatment, therefore, is to remove the cause. The next it to clip the hair off the parts and thoroughly wash with tar soap and water once, and then dry and apply once or twice a day the following lotion: 1 ounce each of acetate of lead and sulphate of zinc, in a pint of water. The bottle must be well shaken each time before applying the medicine. If the cracks in the heel have hard edges it may be necessary to soak these thoroughly in warm water to remove the outside scales—then rub them thoroughly once a week with lunar caustic.

Horses and Mules Eating Dirt, Etc.

A DEPRAVED appetite indicates that the horse or mule is not getting what he requires in his feed, or a disordered appetite.

The remedy is a balanced ration with sufficient variety. If the animal is doing hard work the amount of work should be lessened and if it could be discontinued entirely for a time and the animal fed hay and a small allowance of grain, it would probably be the best line of treatment. If this is not practicable we suggest reducing the work as much as possible under the circumstances and feeding lightly.

Give internally one dram each of dry sulphate of iron and powdered nux vomica a day for ten days or two weeks. If he will not take this in ground feed, place it on the tongue with a large spoon and hold the head up for a few seconds until it is swallowed.

The Progressive Farmer explains to the farmer how he can produce more, save more, than any friend he has.—B. S. Carr, Hillsboro, N. C.

Helps for the Farm Manager

How a Manure Spreader Pays

ON the old basis of prices charged for commercial fertilizer, it was estimated that the average value of manure produced by each horse or mule was $27 per year, by each head of cattle $19, by each hog $12, and by each sheep $2. These values did not include the humus, which is often worth as much as the fertilizing elements in the manure.

The saving to the farmer in time and labor through the use of a manure spreader is very material but what is far more important is the increased yield in crops which is shown in the following field test:

Crop	Acres	Yield
Corn—		
Spreader used	6	420 bu.
Hand spreading	6	336 bu.
Meadow—		
Spreader used	10	35 tons
Hand spreading	10	27 tons

The following figures also cover a test showing the advantages of applying manure with a spreader, in comparison with throwing it from a wagon with a fork:

Crop	Acres	Yield
Corn—		
Spreader used	10	620 bu.
Spread by fork	10	500 bu.
Oats—		
Spreader used	10	560 bu.
Spread by fork	10	420 bu.

Calculating Farm Income: How Much for Labor After Interest Is Allowed

BEFORE a farmer gets paid for his services, whether physical or mental, or both, he has got to show a return of 6 per cent on his money that is tied up in working capital and real estate. Or he may substitute a figure representing a price for which the farm would rent, instead of interest on real estate.

For example, a farmer's receipts are $6,000 and his expenses are $4,500; this would leave him a net income of $1,500 for his services and the capital tied up in the business.

Now to find out what he got for his services he should subtract the figures representing interest on working capital and real estate or net rent of farm. His working capital was $7,500. He was a dairy farmer. Six per cent of $7,500 is $450. His farm was valued at $20,000, and would be bought at that figure in less than 24 hours if offered for sale. So 6 per cent of $20,000 equals $1,200. Adding $1,200 to $450 you have $1,650.

Now his net income was only $1,500, therefore, he received nothing for his work and worry and only 5½ per cent on his investment.—E. R. Hodgson, Agriculturist Virginia Extension Service.

How Much Stock to Justify a Manure Spreader?

THE manure spreader will pay handsomely on any farm where there are from 50 to 100 tons of manure to be spread in the course of a year.

The following are approximately the amounts of manure produced **per 1,000 pounds of live weight** of different farm animals per year when well fed and given sufficient bedding to keep them clean: Sheep, 6 tons; calves, 12 tons; hogs, 8 tons; cows, 13 tons, and horses, 9 tons.

A large part of the manure produced is, of course, dropped in pastures and on cultivated land by the livestock. The farmer can allow for this, and with the foregoing table calculate whether he should have the 50 to 100 tons suggested.

Then if a farmer is not keeping enough livestock to justify him in buying a manure spreader for his own use, it is almost certain that by joining with one or more of his nearby neighbors he can make a manure spreader pay, (1) in the time and labor saved, and (2) in the increased crop yields which the spreader brings about by even distribution of manure.

G. H. ALFORD.

Public Roads: How to Get Federal Aid in Building

COUNTIES wishing Federal aid must first of all make application to their state highway commission. If the state highway commission approves the expenditure, the work is surveyed and estimates of cost, plan, and survey are submitted to the United States Secretary of Agriculture. If finally approved by him, the Secretary of the Treasury is notified to set aside the government's part of the expenditures (not over 50 per cent in any case) to be available when the work of construction is actually begun.

Farm Management in a Nutshell

WE may not know just what is meant by the subject of "farm management," but we all know the meaning of the statements, "It's all in the management," and "He is no manager."

Every farmer must work out a safe and profitable system of farming. This system must provide:

1. Practically all the food and feed necessary for home use.

2. Crops in the rotation to transfer nitrogen from the air to the soil to be used by succeeding crops.

3. At least enough good livestock to consume the roughage that usually goes to waste, provide a full year's work for men and horses, and furnish an abundance of milk, butter, pork, pork products, poultry, and poultry products for home use.

4. Mares engaged in farm work and colt production. This will save the money paid out for mules and horses, but the greatest profit will come from securing in this way sufficient work stock for economical crop production.

5. The most prolific seed for planting purposes.

6. Acid phosphate for soils deficient in phosphorus and lime for soils needing lime.

7. Labor-saving farm implements and machinery for the most economical production of crops.

How to Make Out Income Tax Reports

THE farmer who is liable to the income tax must have his report in by March 15. There is but one way to get the farmer's correct income, and that is to figure it on the inventory basis.

The inventory value of all livestock, grain, feed, and supplies on hand at the beginning of the year should be added to the total farm expenses, and the value subtracted from the total of all farm receipts and inventory value at end of year.

The difference is the farm income. However, from this figure the following deductions should be made:

1. 2 to 5 per cent depreciation on farm buildings.

2. 5 to 6 per cent depreciation on farm fences.

3. 10 per cent depreciation on farm machinery.

4. 15 to 20 per cent depreciation on tractors and farm autos.

5. The allowable deductions on account of being married, caring for dependents, etc., and in addition the total amount paid to church, charitable, educational, and scientific institutions, provided the amount does not exceed 15 per cent of the net income.

Every farmer expecting to make a report for 1920 should take this inventory January 1, and also keep a record of his farm receipts and expenses. This is not as hard a task as many think. Five or ten minutes a day will keep a good record if you have a simple book for the purpose.—Missouri Extension Service.

Suggestions for Silo Filling

IT is important to fill the silo when the corn is exactly at the right state of maturity, that is, when the grain is in the dent and glazed, but can still be broken with the thumb nail. Under average conditions, the two bottom leaves will be turning brown and the shucks will be turning yellow at the ends.

There is more danger of putting the silage in too dry than too moist. With a stave silo the hoops should be tightened up so as to exclude the air and generally loosened a little after the silage swells the staves.

The corn should not be cut down too far ahead or it will dry out. It will take at least six teams to keep the average silo-cutter busy. The silage should be well tramped in order to exclude the air. It should be kept higher at the walls than in the center. At least two men in the silo are necessary when a distributor is not used. It is advisable to use concrete tampers to pack the silage. This prevents molds from developing. The silage should be cut into pieces 1-2 to 3-4 inch long to make it pack well and save waste in feeding. This takes more power but it is worth it.

The silage should feel wet after it is put into the silo. If corn is very mature when cut and is therefore dry, water should be added. A small stream may be run into the blower from a barrel or tank. The blower should be run a few minutes each morning to clear out the air before any one enters the silo.

Shock corn may be put into the silo if water is added at the rate of one pound of water for each pound of shock corn. It may be advisable, under certain conditions, of high priced corn to shuck out the corn and put the stalks into the silo. There is no objection to beginning to feed as soon as the silo is filled. This prevents waste through spoilage on top

Periods of Gestation

Mare	335 to 345 days
Cow	275 to 285 days
Ewe	147 to 153 days
Sow	112 to 118 days
Bitch	60 to 65 days
Cat	55 days
Rabbit	30 days

What Is the Best Breed of Hogs?

THIS is the question that is asked us in nearly every place we go, and is one that cannot be answered by any one except the man who is going to breed and feed the hogs.

Any of the approved breeds of livestock are adapted to certain definite conditions, and the man who is going to handle the animals must study these conditions, and determine for himself just which breed is better suited to his own conditions.

The fact that at the big shows where there is inter-breeds competition, one breed wins one year, and another some other year, shows that the breeds are very similar in many respects, and as we said above, which is the best breed is the question to be answered by each individual person.

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Oliver Chilled Plow Works, South Bend, Ind.
Southern Plow Co., 602 Elm St., Dallas, Tex.
The Cole Mfg. Co., Box 159, Charlotte, N. C.
The Spotless Co., 11th and Canal Sts., Richmond, Va.
The Dunham Co., Berea, Ohio.
The Farm Equipment Co., Baltimore, Md.
The Southern Farm Equipment Co., Rock Hill, S. C.
Texas Implement & Mfg. Co., McGregor, Tex.
J. D. Weed & Co., Savannah, Ga.

POTATO DIGGERS

B. F. Avery & Sons, Louisville, Ky.
S. L. Allen & Co., Inc., Box 1107 B. Philadelphia, Pa.
Bateman Mfg. Co., Box 89-L, Grenloch, N. J.
John Deere, WB 137, Moline, Ill.
Eureka Mower Co., Box 786, Utica, N. Y.
A. B. Farquahar Co., Ltd., Box 319, York, Pa.
International Harvester Co., Chicago, Ill.
Moline Plow Co., Moline, Ill.

ROCK CRUSHERS

The Day Pulverizer Co., Knoxville, Tenn.
Williams Pat. Crusher & Pulverizer Co., 601 First Ave., Montgomery, Ala.
Fulton Supply Co., 47 S. Broad St., Atlanta, Ga.

SILOS

American Machinery Co., 97 S. Forsyth St., Atlanta, Ga.
Birmingham Hollow Tile Co., Dept. F-840-41 Brown-Marx Bldg., Birmingham, Ala.
Chattanooga Sewer Pipe Co., Dept. A, Chattanooga, Tenn.
W. S. Dickey Clay Mfg. Co., Chattanooga, Tenn.
Economy Silo & Mfg. Co., Dept. M, Frederick, Md.
Gibbes Machinery Co., Dept. A-1, Columbia, S. C.
Gehl Bros. Mfg. Co., 123 S. Water St., West Bend, Ind.
Implement Co. of Virginia, Richmond, Va.
The Indiana Silo & Tractor Co., 36 Silo Bldg., Kansas City, Mo.
J. D. Weed & Co., Savannah, Ga.

STALK CUTTERS

The Avery Co., 2502 Iowa St., Peoria, Ill.
B. F. Avery & Sons, Louisville, Ky.
J. I. Case Plow Works Co., Dept. T-26, Racine, Wis.
Emerson-Brantingham Imp. Co., Rockford, Ill.
International Harvester Co., Chicago, Ill.
Moline Plow Co., Moline, Ill.
Southern Plow Co., 602 Elm St., Dallas, Tex.

Walraven Co., 38 West Alabama St., Atlanta, Ga.

STUMP PULLERS

D. T. Bohon & Co., Dept. 10, Harrodsburg, Ky.
The Fitzpatrick Products Corp., Box 74, 99 John St., New York City.
K. C. Haypress Co., Dept. 43, Kansas City, Mo.
Hercules Mfg. Co., 908 28th St., Centerville, Iowa.
Implement Co. of Virginia, Richmond, Va.
A. J. Kirstin Co., 2116 Lud St., Escanabia, Mich.
La Plant—Choate Co., Cedar Rapids, Iowa.
Mohr Steel Co., 2829 26th St., San Francisco, Calif.
Samson Power Co., 511 Virginia Ave., Richmond, Va.
W. Smith Grubber Co., Dept. 14, LaCrescent, Minn.
J. D. Weed & Co., Savannah, Ga.
Williams Steel Stump Puller Co., 218 Williams Bldg., Cordele, Ga.
W. H. Worden Co., Dept. E-126, Pine St., San Francisco, Calif.
Schartow Mfg. Co., Dept. 17 South Milwaukee, Wis.

THRESHERS

(Wheat, oats, pea, bean, etc.)

Avery Co., 2502 Iowa St., Peoria, Ill.
Belle City Mfg. Co., Racine, Wis.
J. I. Case Threshing Machine Co., Racine, Wis.
Emerson-Brantingham Imp. Co., Rockford, Ill.
A. B. Farquahar Co., Ltd., Box 319, York, Pa.
International Harvester Co., Chicago, Ill.
Koger Pea & Bean Thresher Co., 1002 E. Main St., Morristown, Tenn.
Midwest Engine Co., Indianapolis, Ind.
Star Pea Huller Co., Dept. A, Chattanooga, Tenn.

TRANSPLANTERS

Bateman Mfg. Co., Box 89-L, Grenloch, N. J.
J. I. Case Plow Works Co., Dept. T-26, Racine, Wis.
Masters Planter Co., Dept. K-Chicago, Ill.
Rawlings Implement Co., 11 W. Pratt St., Baltimore, Md.
C. M. Wales, Booneville, Miss.

TRACTORS

B. F. Avery & Sons, Louisville, Ky.
Avery Co., 2502 Iowa St., Peoria, Ill.
Atlantic Machine & Mfg. Co., 442 W. Prospect Ave., Cleveland, Ohio.
Adamson Motor Co., Birmingham, Ala.
Allis Chalmers Mfg. Co., Dept. 2-W, Milwaukee, Wis.
Bates Machine & Tractor Co., 1019 Benton St., Joliet, Ill.
Bateman & Companies, Inc., 347 Madison Ave., New York City.
J. I. Case Plow Works Co., Dept. T-26, Racine, Wis.
The Cleveland Tractor Co., 19047 Euclid Ave., Cleveland, Ohio.
J. I. Case Threshing Machine Co., Racine, Wis.
Crawford & Co., Birmingham, Ala.
Ensley Motor Co., Ensley, Ala.
Electric Wheel Co., Box 59 A, Quincy, Ill.
The Frick Co., Waynesboro, Pa.
Henry Ford & Son, Detroit, Mich.
Frick Co., Columbia, S. C.
A. B. Farquahar Co., Ltd., Box 319, York, Pa.
General Tractors, Inc., 234 Old Colony Bldg., Chicago, Ill.
Holt Mfg. Co., Peoria, Ill.
Hart-Parr Co., 581 Lawler St., Charles City, Iowa.
International Harvester Co., Chicago, Ill.
Long-Lewis Hardware Co., Bessemer, Ala.
John Lauson Mfg. Co., 41 Monroe St., New Holstein, Wis.
Moline Plow Co., Moline, Ill.
Midwest Engine Co., Indianapolis, Ind.
New Britian Machine Co., New Britian, Conn.
Samson Tractor Co., 116 Samson Ave., Janesville, Wis.
Stockdell-Myers Hardware Co., Petersburg, Va.
Worthington Pump Mach. Corp., 302 Holthoff Place, Cudahy, Wis.

TRUCKS

The F. A. Ames Co., 3rd St. Plant, Owensboro, Ky.
Bates Machine & Tractor Co., 1019 Benton St., Joliet, Ill.
Corbitt Motor Truck Co., Henderson, N. C.
Dearborne Truck Co., Chicago, Ill.
John Deere, WB 137, Moline, Ill.
Fulton Supply Co., Atlanta, Ga.
International Harvester Co., Chicago, Ill.
Maxwell Motor Co., Detroit, Mich.
Moline Plow Co., Moline, Ill.
Nelson Motor Truck Co., Saginaw, Mich.
Reo Motor Car Co., Lansing, Mich.
Selden Truck Corporation, Rochester, N. Y.
Traffic Motor Truck Corporation, St. Louis, Mo.

WAGONS

American Machinery Co., 7 Nelson St., Atlanta, Ga.
Appleton Mfg. Co., 637 Fargo St., Batavia, Ill.
Bradley Bonded Warehouse Co., Dept. Y, Greenville, S. C.
D. T. Bohon & Co., Dept. 10, Harrodsburg, Ky.
Emerson-Brantingham Imp. Co., Rockford, Ill.
Empire Mfg. Co., Box 373, Quincy, Ill.
Florence Wagon Co., Florence, Ala.
Fulton Supply Co., Atlanta, Ga.
Gibbes Machinery Co., Dept. A-1, Columbia, S. C.
Implement Co., of Virginia, Richmond, Va.
International Harvester Co., Chicago, Ill.
Moline Plow Co., Moline, Ill.
Mogul Wagon Co., Hopkinsville, Ky.
Southern Plow Co., 602 Elm St., Dallas, Tex.
The Farm Equipment Co., Baltimore, Md.
The Southern Farm Equipment Co., Rock Hill, S. C.
The Motor Co., Winston-Salem, N. C.
The Spotless Co., 11th and Canal Sts., Richmond, Va.
J. D. Weed & Co., Savannah, Ga.

WATER PUMPS

American Machinery Co., 7 Nelson St., Atlanta, Ga.
Bateman Mfg. Co., Box 89 L, Grenloch, N. J.
J. D. Weed & Co., Savannah, Ga.
Fairbanks, Morse & Co., Chicago, Ill.
Flint & Walling Mfg. Co., Dept. G, Kendallville, Ind.
Fuller & Johnson Mfg. Co., 39 Palm St., Madison, Wis.
Fulton Supply Co., 47 South Broad St., Atlanta, Ga.
International Harvester Co., Chicago, Ill.
Implement Co. of Virginia, Richmond, Va.
Southern Plow Co., 602 Elm St., Dallas, Texas.
The Farm Equipment Co., Baltimore, Md.
The Southern Farm Equipment Co., Rock Hill, S. C.
Universal Motors Co., Atlanta, Ga.
Carolina Farm Light & Power Co., Box 846, Charlotte, N. C.
Walraven Co., 38 West Alabama St., Atlanta, Ga.

WATER SYSTEMS

Automotive Electric Co., Richmond, Va.
Carolina Farm Light & Power Co., Charlotte, N. C.
Fairbanks, Morse & Co., Chicago, Ill.
Flint & Walling Mfg. Co., Dept. G, Kendallville, Ind.
Gibbes Machinery Co., Dept. A-1, Columbia, S. C.
Fuller & Johnson Mfg. Co., 39 Palm St., Madison, Wis.
The Motor Co., Winston-Salem, N. C.
The Spotless Co., 11th and Canal Sts., Richmond, Va.
The Vaile-Kimes Co., Dept. P-220, Dayton, Ohio.
The Farm Equipment Co., Baltimore, Md.
The Southern Farm Equipment Co., Rock Hill, S. C.
The Securo Co., Baltimore, Md.
Universal Motors Co., Atlanta, Ga.
Western Electric Co., Box PX-2, Atlanta, Ga.
Fulton Supply Co., 47 S. Broad St., Atlanta, Ga.

WIND MILLS

Appleton Mfg. Co., 637 Fargo St., Batavia, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
Stover Mfg. & Engine Co., 2710 Ideal Ave., Freeport, Ill.

WOOD SAWS

Appleton Mfg. Co., 637 Fargo St., Batavia, Ill.
D. T. Bohon & Co., Dept. 10, Harrodsburg, Ky.
Bateman & Companies, Inc., 347 Madison Ave., New York City.
Belle City Mfg. Co., Racine, Wis.
Eagle Sawing Machine Co., Dept. 252, Kansas City, Mo.
Electric Wheel Co., Box 59A, Quincy, Ill.
Fairbanks Morse & Co., Chicago, Ill.
A. B. Farquahar & Co., Dept. 10, Harrodsburg, Ky.
Flint & Walling Mfg. Co., Dept. G, Kendallville, Ind.
Folding Sawing Machine Co., 161 West Harrison St., Chicago, Ill.
Gehl Bros. Mfg. Co., 123 S. Water St., West Bend, Wis.
K. C. Haypress Co., Dept. 43, Kansas City, Mo.
Hertzler & Zook Co., Box 15, Belleville, Pa.
International Harvester Co., Chicago, Ill.
Implement Co. of Virginia, Richmond, Va.
Ottawa Mfg. Co., 1099 King St., Ottawa, Kan.
Stover Mfg. & Engine Co., 2710 Ideal Ave., Freeport, Ill.
The Phillips Drag Saw & Mfg. Co., 702 Kemper Bldg. Kansas City, Mo.
The Peter Gerloch Co., Dept. 11, Cleveland, Ohio.
R. M. Wade & Co., 386 Hawthorne Ave., Portland, Oregon.
J. D. Weed & Co., Savannah, Ga.

WELL DRILLS

Flint & Walling Mfg. Co., Dept. G, Kendallville, Ind.
Williams Bros., 452 State St., Ithaca, N. Y.

"Mention The Progressive Farmer whenever you write to any Progressive Farmer advertiser. Our responsibility under our guarantee of reliability holds good only when you do this."

FIELD CROPS AND LEGUME INFORMATION

(Concluded from page 19, column 4)

Quantity Seed Required Per Acre

I.—FIELD CROPS

Alfalfa (broadcast)	20 to 25 pounds
Barley	8 to 10 pecks
Buckwheat	3 to 5 pecks
Cotton	½ to 1 bushel
Corn	⅜ to ¾ bushel
Cowpeas (broadcast)	1 to 2 bushels
Cowpeas (drill)	½ to ¾ bushels
Clover (red)	8 to 10 pounds
Clover (white)	4 to 8 pounds
Clover (crimson)	12 to 20 pounds
Clover (bur)	4 to 6 bushels
Field pea (small variety)	2½ bushels
Field pea (large variety)	3 to 3½ bushels
Grass (for lawns)	3 to 5 bushels
Kale	2 to 4 pounds
Lespedeza	12 to 25 pounds
Millet, pearl (for hay)	8 to 10 pounds
Melilotus	15 to 25 pounds
Oats	2 to 3 bushels
Orchard grass	12 to 15 pounds
Peanuts, (Virginia hulled)	½ bushel
Peanuts (Spanish hulled)	1½ pecks
Peanuts (in shells)	2 bushels
Rice	1 bushel
Rape (broadcast)	4 to 8 pounds
Red top (recleaned)	12 to 15 pounds
Rye (early)	3 to 4 pecks
Rye (late)	6 to 8 pecks
Rye (forage)	3 to 4 bushels
Sorghum (forage-broadcast)	1 to 2 bushels
Sorghum (for seed or syrup)	2 to 5 pounds
Sorghum (for seed or syrup) (drills)	3 to 5 quarts 6 pounds, ½ bushel
Soy bean (drills)	2 to 3 pecks
Soy bean (broadcast)	1 to 1½ bushels
Timothy	15 to 25 pounds
Turnip (broadcast)	2 to 4 pounds
Velvet bean	1 to 2 pecks
Vetch, hairy (broadcast) with 1 bushel small grain	1½ bushels
Vetch, kidney	18 to 22 pounds
Wheat	5 to 7 pecks

II.—TRUCK CROPS

Bush beans	1 to 1¼ bushels
Pole beans	½ bushel
Garden beets	8 pounds
Mangel and sugar beets	10 to 12 pounds
Sweet and roasting ear corn	6 quarts
Cucumber	2 pounds
Lettuce	2 to 3 pounds
Cantaloupes	2 to 3 pounds
Watermelon	1½ to 4 pounds
Okra	8 to 10 pounds
Onions	4 to 5 pounds
Onion sets	8 to 10 bushels
Garden or English peas	2 bushels
Potatoes	8 to 10 bushels
Summer or bush squash	2 to 3 pounds
Turnip	2 to 3 pounds
Spinach	8 to 10 pounds

FOR SOWING IN BEDS TO BE TRANSPLANTED

Cauliflower	6 ounces
Cabbage	6 to 8 ounces
Onions	3 pounds
Celery	4 to 6 ounces
Eggplant	6 ounces
Pepper	4 to 6 ounces
Tomato	4 ounces
Tobacco	2 to 3 ounces

Inoculation for Legumes

IN THE grouping below, any one legume in a group will, if it has nodules on its roots, inoculate for any other legume in the same group, but so far as we know for no legume of any other group:

Group 1—Red clover, Crimson clover, Alsike clover, White clover, Hop clover.

Group 2—Alfalfa, Bur clover, Sweet clover, and Melilotus.

Top-dressing Small Grains

NITRATE of soda and sulphate of ammonia are about the only materials we would recommend for top-dressing small grains. About 75 to 100 pounds per acre will be about right, and this should be scattered broadcast over the grain about eight to ten weeks before the grain is ready to harvest. The application should be made when the foliage is dry, but it will be advantageous to make it when the top soil is moist. It is not necessary to harrow the soda in, though a harrowing will probably be beneficial to the grain.

Nitrate of Soda: When to Apply

IN APPLYING nitrate of soda and sulphate of ammonia to the corn and cotton, extra care should be used to get them on at the right time. For corn, the maximum results will be obtained by applying when the plants are from one to two feet high. Much later applications will be partly lost because the crop will mature before they can be taken up. For cotton, we would aim to make the application about the time the cotton is chopped out, and not later than the appearance of the first squares.

Pure Salt — and ALL Salt

No Grit—No Moisture—No Lumps—No Adulteration

Buy a 70 pound bag of Colonial Special Farmer's Salt and you get 70 pounds of pure, fine, flaky salt, all ready for use without breaking up or sifting and a 70 pound bag of Colonial Special Farmer's Salt is as big as a 100 pound bag of ordinary salt because it is all salt and no moisture.

COLONIAL
SPECIAL FARMER'S
SALT

Here's What It Will Do

IMPROVES COOKING AND BAKING—Gives just the right salt flavor and goes farther in the kitchen because it is all salt—and all dissolves.

MAKES SWEETER BUTTER—highly refined salt like this never gives a gritty taste. The butter has longer keeping qualities and a finer, richer flavor.

CURES MEAT MORE QUICKLY—Preserves the natural color and appearance, penetrates completely and brings out all the fine, rich flavor.

DISSOLVES QUICKLY—NEVER LUMPS—That means saving in time. The strength of the salt means economy in amount used. Never any waste because it does not lump and cannot leak out of the strong 70 pound bags in which it is packed. These bags make splendid toweling when empty.

LOOK FOR THE NAME ON THE BAG—There is only one Colonial Special Farmer's Salt. Be sure you get it and no other. If your dealer does not have it, send us his name.

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Chicago, Illinois Buffalo, N. Y. Boston, Mass. Atlanta, Ga.

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American Limestone Co.

Knoxville, Tennessee

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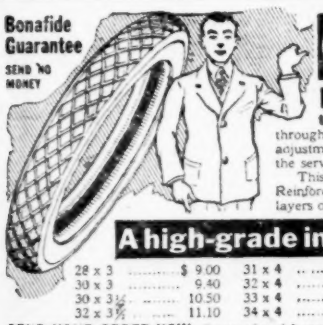
SEND NO MONEY



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Built for 8000 Miles Service

these tires are actually guaranteed 5000 miles. If, through any defect in your tire, you fail to get the full mileage, an adjustment will be made on the basis of 5000 miles. You pay only for the service you get.

This is not a sewed or retreaded tire. It is rebuilt throughout. Reinforced side walls. Non-skid tread of new live rubber and two extra layers of fabric. Built for service and backed by a written guarantee.

A high-grade inner tube with every tire

28 x 3	$ 9.00	31 x 4	$13.35	32 x 4½	$16.00	36 x 4½	$17.85
30 x 3	9.40	32 x 4	13.70	33 x 4½	16.50	33 x 5	18.50
30 x 3½	10.50	33 x 4	14.15	34 x 4½	17.15	35 x 5	18.85
32 x 3½	11.10	34 x 4	14.50	35 x 4½	17.40	37 x 5	18.95

SEND YOUR ORDER NOW. Section of tire left unwrapped for your inspection. Examine it first—then pay C. O. D. and express charges and the tire is yours. This is a sound investment and represents a great saving over your present tire expense.

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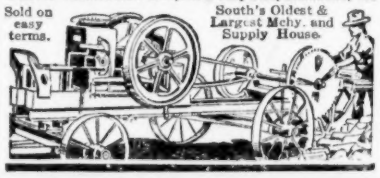

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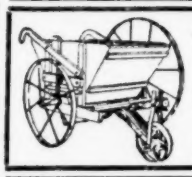

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What the Farmer Wants to Know

(Continued from page 15, column 4)

Experiment Station Chiefs: H. W. Barre, Botanist and Director; C. C. Newman, Horticulturist; A. F. Conradi, Entomologist; R. O. Feeley, Consulting Veterinarian; W. W. Fitzpatrick, Dairy Husbandman; C. P. Blackwell, Agronomist; A. B. Bryan, Agricultural Editor; F. C. Hare, Poultry Husbandman; G. F. Lipscomb, Chemist; L. V. Starkey, Animal Husbandman.

Southern Carolina Tobacco Growers' Association: President, N. A. McMillan Mullins; Vice-President, Bright Williamson, Darlington; Treasurer, J. W. McCown, Florence; Secretary, T. B. Young, Timmonsville.

South Carolina Livestock Association: Acting President, C. B. Woolsey, Aiken; Secretary-Treasurer, W. J. Shealy, Clemson College.

State Agricultural and Mechanical Society: President, J. N. Kirven, Darlington; Vice-President, A. B. Langley, Columbia; Secretary, D. F. Efird, Columbia; Treasurer, D. G. Ellison, Columbia. (This organization is the State Fair promoter, and meets during the Fair).

S. C. Duroc-Jersey Swine Breeders' Association: President, F. J. Parham, Union, S. C.

S. C. Poultry Breeders' Association: President, R. M. Cooper, Jr., Wisacky.

S. C. Poultry Breeders' Association: President, L. C. Breeden, Bennettsville; Secretary, F. C. Hare, Clemson College. (Meets during State Fair each year).

S. C. Cotton Association: President, R. C. Hamer, Eastover; Vice-President, J. H. Claffey, Orangeburg; Executive Committee—B. F. McLeod, Charleston; G. L. Toole, Aiken; J. P. Stribling, Richland; J. B. Cannon, Spartanburg; L. I. Guion, Lugoff; T. L. Manning, Dillon; T. J. Kirven, Sumter, Rt. 5.

S. C. Dairy Association: President, J. A. Shanklin, Camden; Vice-President, R. M. Cooper, Jr., Wisacky; Secretary, J. L. LeMaster, Clemson College.

Agricultural Society of South Carolina: Secretary, W. M. Frampton, Charleston.

South Carolina Landowners' Association: President, Niels Christensen, Beaufort; Secretary, George R. Wheeler, Columbia.

South Carolina Poultry Association: Secretary, T. L. Little, Camden.

South Carolina State Fair Association: Secretary, D. F. Efird.

State Superintendent of Education—J. E. Swearingen, Columbia.

Your County Agent: His Name and Address

FOLLOWING are names of the official farm demonstration agents in each county in North Carolina, South Carolina, and Virginia having agents at work as we prepare this report.

Following is the list—the name of the county being given first in alphabetical order, followed by the name of the agent. In every case where no postoffice address is given, the address of the agent is **at the county seat,** and a letter addressed to him there will reach him promptly:

Virginia County Agents.

ALBERMARLE, S. S. Teel; Amelia, Chas. F. Phillips; Amherst, O. B. Ross; Appomattox, W. H. Byrne; Augusta, P. C. Manley; Bath, J. Nick Jones; Bedford, O. W. Collins; Bland, H. S. Peyton; Botetourt, D. V. Wiley; Brunswick, J. B. Lewis; Buckingham, Gordon A. Elcan, Sheppards; Caroline, R. F. Holberton; Carroll, Omar C. Cox; Charlotte, H. E. McSwain; Chesterfield, T. D. Burfoot, Richmond, Rt. 8; Craig, W. O. Martin; Culpeper, B. P. Williams, Winston; Dickenson, Claude S. Leffel; Dinwiddie, M. O. Roache; Fairfax, H. B. Derr; Fauquier, W. P. Sadler; Fluvanna, W. I. Smith; Grayson, R. L. Wiley; Greensville, C. P. Grizzard, Drewrysville; Hanover, J. C. Stiles, Ashland; Henrico, W. L. Kirby; Henry, J. C. Holmes; James City, E. M. Slauson; King George, L. M. Walker, Jr.; Lee, E. S. Suttle; Loudoun, J. R. Lintner; Louisa, J. S. Wills; Lunenburg, E. G. Stokes, Kenbridge; Mecklenburg, N. H. Williams, Jr., Chase City; Nansemond, P. S. Blandford, Drivers; Norfolk, F. L. Portlock, Berkley Station, Norfolk; Nottoway, Geo. A. Forsythe; Orange, E. V. Breeden, Gordonsville; Page, L. V. Amburgey; Patrick, S. L. Cole; Pittsylvania, W. M. Perry, Danville; Powhatan, Frank Michaux, Jordan's Store; Princess Anne, H. W. Ozlin, Lynnhaven; Prince William, W. L. Browning; Pulaski, E. C. Grigsby; Richmond, John F. Monroe; Roanoke, J. M. Gish; Rockingham, M. G. Lewis, Lexington; Rockingham, C. W. Wampler; Shenandoah, B. A. Warriner, Woodstock; Smythe, Lee M. Cole, Jr.; Spotsylvania, W. P. Linthicum; Stafford, V. B. Perry; Surry, O. M. Cockes, Elberon; Sussex, W. T. Parker, Homeville; Tazewell, R. R. Wall; Washington, E. W. Grubbs; Wise, W. S. Goss; Wythe, J. E. Delp; York, D. S. Harris, Williamsburg.

Negro Agents.

ALBERMARLE, C. G. Greer, Charlottesville, Rt. 2; Amelia, C. C. Archer, Chula, Rt. 1; Brunswick, H. C. Green; Buckingham, S. J. Ellis, Dillwyn; Caroline, W. G. Young, Upper Zion; Charlotte, J. F. Wilson, Keysville; Charles City, R. E. F. Washington, Roxburg, R. F. D.; Dinwid-

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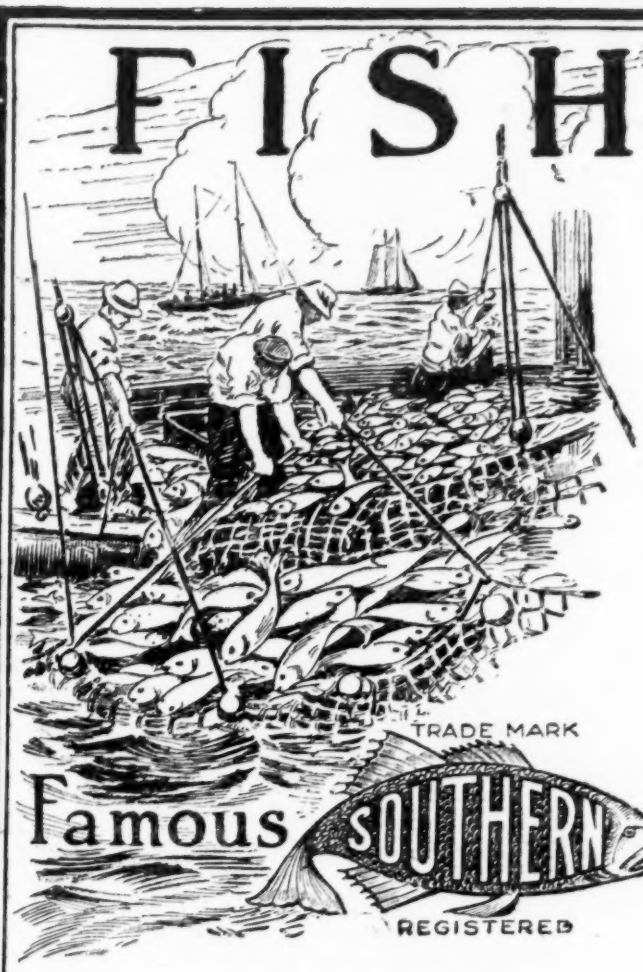
FISH



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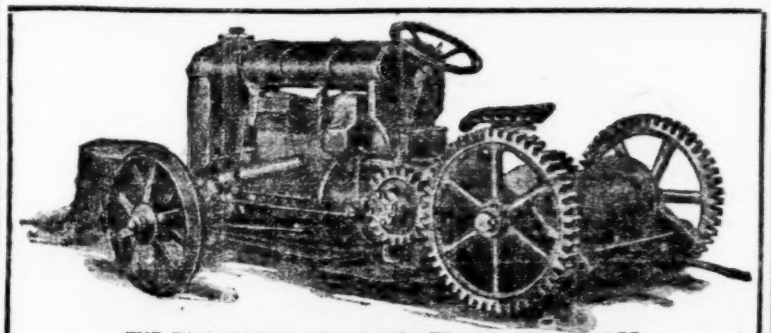

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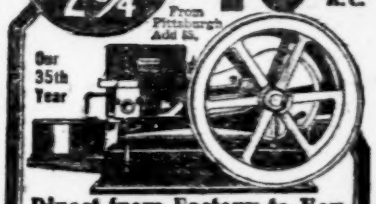

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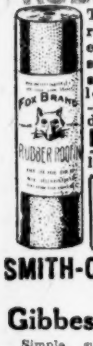

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Miscellaneous Information

Salting and Curing Hides

THE next important operation after the hides and skins have been correctly removed is that of curing or preserving them in a sound condition which is accomplished by thorough salting. In cold weather hides and skins may be safely kept for some time without salting, though care should be taken to prevent them from freezing. In spring, summer and fall, however, they must be salted properly if they are to be made into good leather and pay for the work of saving them.

Cattle and Horse Hides.—Before salting see that the hide is clean. Other factors being equal, clean hides bring the most money because there is less waste on them and they make better leather. After the hide has been removed carefully from the animal, clean off as much as possible all remaining dirt and blood, remove any piece of flesh by scraping with the back of a butcher knife and by careful cutting. Trim off any ragged edges, and split the ears twice. Then allow the hide to lose its animal heat, in a cool, dark, dry place. Six hours is usually long enough for this although overnight is permissible in cool weather.

For curing, select a cool place, preferably a cellar or a barn floor free from drafts and out of the direct sunlight. A floor with a slight slope and a drain is the best. Sprinkle on the selected space a thin layer of clean crystal salt about the size of a pea, or ordinary salt of the kind used for salting meat. When the hide has cooled sufficiently spread it, hair side down over the salted floor, being sure to straighten out all folds and laps. Sprinkle fresh, clean salt all over the flesh side of the hide, using about one pound of salt for every pound of hide. See that all parts of the flesh side receive a sprinkling of the salt. Be sure to use plenty of salt and rub it in well along the edges, head, neck, legs, wrinkles and the heavy portions. If several hides are to be cured, pile them one on top of the other, always hairy side down, with the heads at one end, and salt each one on the flesh side as directed. In piling the hides, do not drag them across the stack of salted ones, as this disturbs the salt on those underneath causing unsalted spots and spoiling hides. The liquor from the piles of hides must be drained away to prevent damage to the bottom ones.

In curing, the hides if properly salted will become firm and stiff when the same are known as "salt firm" or "salt hard." This requires some time, generally 6 to 14 days, after which the hides are ready for bundling and shipping.—Farmers' Bulletin.

Bedding Sweet Potatoes: Rules to Observe

BEFORE the potatoes are bedded they should be carefully picked over. All with black-rot spots and all badly mutilated potatoes should be thrown out. The sound, healthy ones should then be disinfected by immersing them for ten minutes in a solution made by dissolving one ounce of mercuric chloride crystals in eight gallons of water. In this work only wooden receptacles should be used.

For treating a large quantity of potatoes about 50 gallons of the solution may be made up at one time. After treating the first ten bushels in this 50 gallons, one-half ounce more of the mercuric chloride crystals should be added, and also enough water to bring the total amount of the solution once more up to 50 gallons. The mercuric chloride crystals will dissolve readily in hot water. The potatoes should be treated just before bedding. Rinsing in water after the treatment is not necessary.

If mercuric chloride cannot be obtained, the potatoes may be disinfected by immersing for five minutes in a solution of formaldehyde (commercial, 40 per cent) made by diluting one quart of the formaldehyde with 50 gallons of water. This solution can be used repeatedly without losing strength. The potatoes need not be rinsed, but should be bedded soon after treatment.

Preparation of Hotbed.—If the old hotbed is to be used, the dirt should be carted away and replaced by new soil or sand from the woods or elsewhere, where sweet potatoes have never been grown. The framework should be disinfected by spraying with a solution of formaldehyde similar to that recommended above. All decayed sweet potatoes and rubbish likely to harbor the disease germs should be raked up from around the bed and carted off or, preferably, burned.

Cover the potatoes with soil or sand of the same sort as that used in making up the hotbed. If manure is used for heating be sure that it has not been infected with the disease germs by means of rotted sweet potatoes thrown on it. If the bed is near the barnyard, fence it in or cover it with chicken wire to keep chickens, dogs, or other animals from running over it, since they may carry the disease germs on their feet.

Incubator Will Pay if You Set 150 Eggs or More Per Year

AT PRESENT prices of feed it costs about 5 cents a week to feed a hen. It requires about 12 weeks for a hen to hatch and rear her brood to the age of "weaning." This means a cost of 60 cents per 15 eggs for the hen's time in hatching and raising, to say nothing of the profit she might have made had she been left in the laying flock.

It requires 10 hens to hatch 150 eggs which at 60 cents for each hen means $6 for a "150-egg hatch." That is the cost of hen-hatching and managing. On the other hand, it requires about 14 gallons of oil at a cost of $2.80 to "incubator hatch" and "brood rear" the chicks from 150 eggs. This leaves $3.20 as interest on the investment for an incubator and brooder even if the incubator were set but once during the season, and it can be set three or possibly four times.

A hen can be set only when the hen is ready; an incubator, when the eggs are ready. This fact alone means early and profitable chicks. It would seem that an incubator and brooder would be a profitable investment wherever 150 eggs or more eggs are to be incubated during the season.—Ohio Agricultural College.

Directions for Poisoning Rats With Barium Carbonate

RATS vary their diet according to the season and local conditions, and for this reason trials should be made to find what baits they will eat at any particular time or place. One bait from each of the three following classes should be treated with barium carbonate, thus making up three separate kinds of poisoned bait.

Kinds of Baits

Meats: Hamburg steak, sausage, fish, fish offals, crab meat, fresh liver, broken fresh eggs, bacon.

Vegetables and Fruits: Cantaloupe, apple, tomato or cucumber in thin slices, green corn, cut from cob; banana, boiled carrot, or baked sweet potato, mashed.

Other Foods: Toasted bread, cheese, rolled oats, cereals, peanut butter.

Treatment With Barium Carbonate

Mix barium carbonate thoroughly through the soft bait with the hands or mix with a spoon in the proportion of one part barium carbonate to four parts of bait. Add water when necessary to make them moist. Sift barium carbonate over the sliced baits and rub it into them with fingers or knife.

Distribution of Prepared Baits

A teaspoonful, or small portion, of each of the three separate baits should be set in runways or other places frequented by rats. Set groups of these three baits on strips of paper or board at intervals of 10 to 20 feet. For any uneaten bait, substitute on the following night another from its class. If none are eaten, substitute an entirely new series. Continue to set poison at frequent intervals until rats disappear.

To Set Poison in Poultry Inclosure

Over the poisoned bait place a small box with holes of 2-inch diameter at each end, and then over the small box place a large box with holes of 2-inch diameter at each side. The bait should be very wet or of such consistency that the rats cannot drag it from under the boxes.

General Rules

Remove so far as practicable all accessible food before poison is used.

All baits must be fresh and of good quality.

Premises should be inspected each day to remove dead rats and to pick up and destroy uneaten baits.

Caution: Keep barium carbonate out of reach of children and irresponsible persons and from domestic animals and fowls.

Antidote for Barium Carbonate

Give an emetic of salt, mustard, and water, followed by Epsom salts or Glauber's salts. Call a physician or veterinarian as the case may require.—Oklahoma Station.

Tanning of Furs, Peltries and Skins

FIRST. All skins, whether for furs, other peltries, or leather must be thoroughly freed from flesh and foreign material. To do this, beam with a knife or scraper, and then scour well in suds of fine soap and sal soda, before any tan stuff or coloring matter is applied. Care should be exercised to see that the pelt is perfectly free from suds by rinsing and wringing; also by beaming previous to tanning.

Second. When the pelt is well cleaned and scoured, as above directed, make a brine of common salt at blood heat until no more will dissolve. Then prepare a like quantity of mucilage, by passing very warm water through a fine sack filled with clean wheat bran. Also dissolve a small quantity of good starch in warm water. Let the brine, mucilage and starch water settle till clear, then pour them carefully together into a wooden or earthen vessel, of sufficient dimensions to give free motion to the pelts when stirred. Place the vessel where it will keep warm for two hours.

Third. Dip the pelts in clean, strong alum water, at blood heat for two hours; rinse the pelts free from the alum water, and wring or beam them dry as possible.

Fourth. When all is ready, put into a mixture of brine and mucilage (still keep warm) and add a quantity of sulphuric acid (oil of vitriol) two pounds of acid to 10 gallons of water or mixture and put the pelts in quickly, stirring them briskly as possible for a few minutes. Take out the pelts, and scrape the flesh clean and dry as possible, putting back in the same process for one hour. Be careful to have the mixture touch every part of the pelt.

Fifth. Let the pelts hang in a shady, airy place, until just dry enough to turn white when pulled in any direction. Continue the pulling and working of each pelt, changing the pelt around as it is pulled, to keep the fibre subject to an even effect. Much depends upon working the pelts at the right time, that is, when just dry enough to turn white when pulled or stretched, and by continuing the process of working until fully dry.

Sixth. When the pelts are quite dry they should be beamed over a beam, with a dull beaming knife, and finished by polishing the flesh side with coarse sandpaper.

Farmers' Bulletins

THE following farmers' bulletins have been published since our last year's Reference Special.

You can get any of them, or any number up to five or six at a time, free, by addressing a postal card to your Congressman, or to "The Secretary of Agriculture," Washington, D. C., and stating the numbers you wish. Order by number always.

1082—Home Supplies Furnished by the Farm.
1083—The Hessian Fly.
1084—Control of American Foulbrood.
1086—How Insects Affect the Rice Crop.
1087—Beautifying the Farmstead.
1088—Selecting a Farm.
1090—Rabbit Raising.
1091—Lining and Loading Cars of Potatoes for Protection from Cold.
1094—The Alfalfa Caterpillar.
1096—Frost and the Prevention of Damage from It.
1097—The Stable Fly.
1098—Poisoning the Boll Weevil—Dusting Machinery.
1100—Coöperative Marketing of Woodland Products.
1101—The Argentine Ant as a Household Pest.
1102—The Crow and Its Relation to Agriculture.
1105—Care of Mature Fowls.
1107—Brood Coops and Appliances.
1108—Care of Baby Chicks.
1112—Culling for Eggs and Market.
1113—Poultry Houses.
1114—Common Poultry Diseases.
1116—The Selection and Care of Poultry Breeding Stock.
1117—Forestry and Farm Income.
1118—Dockage Under the Federal Wheat Grades.
1119—Fall-sown Oats.
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1149—Growing Corn in the Southeastern States.
1157—Waterproofing and Mildewproofing in Cotton Duck.
1160—Diseases of Apples in Storage.
1162—Proso or Hog Millet.
1166—Poison Ivy and Poison Sumac and Their Eradication.
1175—Better Seed Corn.
1176—Control of Root, Stalk, and Ear Diseases of Corn.
1178—Tree Surgery.

What to Plant for Poultry Each Month

FEBRUARY—Sow (broadcast) Canada field peas or oats. Use 1 bushel peas, or 2 bushels oats per acre. May graze in from 45 to 60 days, if weather has been warm. If season backward grazing will be later.

March—Sow rape broadcast in well prepared ground, using 5 or 6 pounds seed per acre. When 8 to 10 inches high it can be grazed, or pulled, cut fine and fed to fowls. It can be grazed till consumed or until warm weather.

May—Be sure this month to plant mangels for winter use; fertilizing or manuring well. Plant seed 1 inch deep in rows 2½ to 3 feet apart. Sow thick, later thin to 10 inches apart.

June—Soy beans or buckwheat. Sow one bushel either per acre. Can graze when about 4 to 6 inches high.

August—Sow turnips, using 3 pounds seed to the acre on well prepared ground. Turnips can be grazed till freezing weather or the roots later can be buried or gathered from the field and fed as winter succulent feed.

September—Sow crimson clover, or sweet clover, using 15 pounds crimson clover seed to the acre on well prepared ground or 25 pounds of sweet clover. Can graze as soon as it is 4 to 6 inches high. Can graze all winter and early spring. Rape for late spring and winter grazing should be sowed in September.

October—Sow oats, using two bushel to the acre. Can graze till hard, freezing weather.

November—Sow rye, using one bushel to the acre. Can graze all winter.

State Boys' Club Agents

FOLLOWING are state boys' club agents in the Southern states. Write them for any information about boys' club work: Alabama, Jas. L. Herron, Auburn; Arkansas, W. J. Jernigan, Little Rock; Florida, R. W. Blacklock, Gainesville; Georgia, J. K. Giles, Athens; Kentucky, Carl W. Buckler, Lexington; Louisiana, W. C. Abbott, Baton Rouge; Mississippi, Jas. E. Tanner, Agricultural College, North Carolina, Homer H. B. Mask, Raleigh; Oklahoma, E. B. Shotwell, Stillwater; South Carolina, L. L. Baker, Bishopville; Tennessee, G. L. Herrington, care University, Knoxville; Texas, R. W. Persons, College Station; Virginia, Chas. G. Burr, Blacksburg.

Practical Weights and Measures

Collection of Score Cards

CORN (ear) Prolificacy, 30 points; trueness of ear to type, 20 points; market condition, 20 points; character and uniformity of ears, 15 points; character and uniformity of kernels, 15 points.

2. Hay—Maturity (cut at proper time) 25 points; condition, 25 points; color, 20 points; aroma, 20 points; textures, 10 points.

3. Peanuts.—Uniformity of exhibit, 30 points; color of hulls, 20 points; maturity, 30 points; trueness to type, 20 points.

4. Irish Potatoes.—Uniformity, 40 points; smoothness, 20 points; freedom from blemishes, 20 points; shallowness of eyes, 10 points; marketable size, 10 points.

5. Sweet Potatoes.—Uniformity, 40 points; smoothness, 20 points; trueness to type, 20 points; freedom from blemishes, 10 points; marketable size, 10 points.

6. Fruit.—Size, 15 points; color, 15 points; uniformity, 20 points; freedom from blemishes, 25 points; quality, 25 points.

7. Plowing.—Straightness of furrows, 15 points; uniformity of furrow slice, 15 points; uniformity of furrow, 15 points; finishing of ends and corners, 10 points; skill in handling plow and team, 15 points; connecting two lands, 10 points; general quality of work, 10 points; amount accomplished in given time, 10 points.

Estimating Corn in a Crib

TO FIND the number of bushels of unshucked corn in a crib, multiply the length of the crib by the width and then by the height, and divide the product by 5,000. The quotient will represent the bushels of unshucked corn. LxWxH of crib divided by 5,000 is bushels unshucked corn.

To find the number of bushels when the corn is shucked but not shelled, multiply the length of the crib by the width and by the height, and divide the product by 4,300. LxWxH of crib divided by 4,300 is bushels shucked corn.

To find the number of bushels of shelled corn, multiply the length of the crib by the breadth and by the height, and divide the product by 2,150. LxWxH of corn in crib divided by 2,150 is bushels of shelled corn.

In each rule the dimensions of the crib for height, width and length must be in inches and not in feet or feet and inches.

Practical Measurements of Land

TO FIND the number of acres in any rectangular piece of land (See Fig. 1) multiply the length by the breadth in rods and divide by 160 (the number of square rods in an acre.)

(Fig. 1)

In a triangular field (one with three sides), when the length of one side and of the perpendicular to that side from the opposite angle is known, or can be measured, divide one-half the product of the side and perpendicular by 160. Hence the area of a three-sided field with one right angle equals one-half the product of the two short sides.

When all three sides are known, from half the sum of their lengths subtract each side separately, multiply the remainders and half the sum of the sides together; the square root of the product divided by 160 will be the area in acres.

When the field is in the shape of a **trapezoid** (a four-sided figure with one pair of sides parallel) divide one-half the product of the sum of the parallel sides and the perpendicular between them by 160.

To find the area of a field with any number of straight sides, divide it by straight lines into convenient parts—three or four sides—and find the area of each of them by the above methods and add these areas together.

NOTE.—If the measurements are taken in **yards** instead of rods as above, then the result in each case should be divided by 4,840 (the number of square yards in an acre) to reduce to acres. If the measurements are made in **feet** instead of rods, then the result in each case should be divided by 43,560 (the number of square feet in an acre) to reduce to acres.

Weight of a Quart of Cream

THE weight of a quart of cream is not constant, because the percentage of fat in cream is very variable. The following table gives the weight of cream of different percentage of fat:

Percentage of fat	Weight of one quart of cream in pounds	Weight of one gallon of cream in pounds
20	2.115	8.460
25	2.10	8.40
30	2.088	8.352
40	2.055	8.220
50	2.028	8.112

—From "Practical Dairy Problems" Bulletin, Cornell University.

Lumber Measurements

NUMBER of Cubic Feet in the Trunk of a Standing Tree—Find the circumference in inches, divide by 3.1416, square the quotient, multiply by length in feet, divide by 144, deduct about one-tenth for thickness of bark, and the result will be, approximately, the number of cubic feet.

To find the Quantity of Lumber in a Log—Multiply the diameter in inches at the small end by one-half the number of inches, and this product by the length of the log in feet, which last product divide by 12. Example: How many feet of lumber can be made from a log, 30 inches in diameter and 14 feet long? Solution: Thirty times 15 equals 450; 450 times 14 equals 6,300; 6,300 divided by 12 equals 525 feet. Answer.

Rules for Measuring Hay

HAY in Square or Oblong Stacks.—Multiply the length in feet by the width in feet and this by one-half the height in feet. Divide the result by 300. The quotient will represent the amount of hay in tons.

Hay in Round Stack.—Square the distance around the stack in yards, multiply this by four times the height in yards, point off two places from the right, and divide the remainder by 20. The quotient will represent the amount of hay in tons.

Improved Roads and R. F. D. Routes in Southern States

IS YOUR state getting its share of the R. F. D. mail service money of the United States and of the good roads money appropriated by the United States government?

Following are the statistics for the Southern states:

	R.F.D. Roads	Miles Surface Roads, 1919
Alabama	1,131	6,125
Arkansas	676	2,000
Florida	263	3,900
Georgia	1,611	13,200
Kentucky	867	13,900
Louisiana	308	2,700
Mississippi	961	2,700
North Carolina	1,393	6,850
Oklahoma	1,157	700
South Carolina	882	3,800
Tennessee	1,594	8,880
Texas	2,090	12,300
Virginia	1,117	6,150

Get a Copy of Your County Soil Map

DO YOU know what type of soil your farm has?

And do you know what kinds of fertilizers are most needed, or pay best, on that type of soil?

If you do not know these things, you may be wasting a lot of money. But how can you find out? Well, careful experimenting will help you a lot, but the first thing to do is to get a report of the United States Bureau of Soils, if one has been made for your county. If it has been made, it covers every farm in your county, so you will know just what kind of soil your individual farm has. The big map of your county is itself worth 50 cents.

Following is a list of counties for which soil maps have been made. Apply to "Bureau of Soils, United States Department of Agriculture, Washington, D. C.," for these marked **free.** For those which have been nearly used up so that a **charge** of 15 cents is necessary, address "Superintendent of Documents, Government Printing Office, Washington, D. C."

NORTH CAROLINA

Free Soil Maps.—Allegheny County, Anson, Ashe, Beaufort, Bladen, Cabarrus, Caldwell, Caswell, Chowan, Cleveland, Columbus, Davidson, Edgecombe, Forsyth, Gaston, Granville, Halifax, Harnett, Henderson, Hertford, Hyde (Lake Mattamuskeet area); Johnston, Lincoln, Madison (Greenville area); Mecklenberg, Pender, Pitt, Randolph, Richmond, Robeson, Rowan, Scotland, Stanley, Transylvania, Union, Wake, Wayne.

Soil Maps for Sale (15c each.)—Alamance County, Asheville, area (parts of Buncombe, Haywood, and Madison Counties); Carey area (part of Wake County); Duplin; Hickory area (parts of Alexander, Burke, Caldwell, Catawba, Iredell, and Lincoln Counties); Mt. Mitchell area (parts of Buncombe, McDowell, Madison, Mitchell, and Yancey Counties); Pasquotank and Perquimans Counties; Raleigh to Newbern area (parts of Craven, Green, Johnston, Jones, Lenior, Wake, and Wayne Counties).

SOUTH CAROLINA

Free Soil Maps—Abbeville area (parts of Abbeville, Anderson, Greenwood, and Laurens Counties); Bamberg, Barnwell, Berkeley, Campobello area (parts of Greenville and Spartanburg Counties); Charleston area (parts of Charleston and Colleton Counties); Chester, Chesterfield, Clarendon; Conway area (part of Horry County); Darlington area (Darlington County and part of Lee County); Dorchester, Fairfield, Florence, Georgetown, Hampton, Horry, Marlboro, Lancaster, Oconee, Orangeburg, Richland, Saluda, Sumter, Union.

Soil Maps for Sale (15c each).—Cherokee, York.

VIRGINIA

Free Soil Maps.—Accomac and Northampton Counties; Alexandria and Fairfax, Campbell, Frederick, Henrico.

Soil Maps for Sale (15c each).—Appomattox, Chesterfield, Hanover.

Spreading Lime—Rates Per Acre

PILES of lime, two rods apart, gives 40 piles to the acre. Approximate amount in pile will vary as follows:

Lime at rate per acre of—	Amt. lime in each pile
½ ton	25 pounds
1 ton	50 pounds
1½ tons	75 pounds
2 tons	100 pounds
2½ tons	125 pounds
3 tons	150 pounds
3½ tons	175 pounds
4 tons	200 pounds

—Louisiana Experiment Station.

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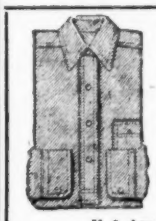

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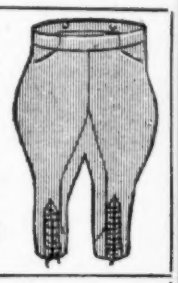

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This is an **A B C** book for the person owning a home orchard. **It is not full of technical terms,** nor are the subjects treated so extensively as to force one to wade through a great amount of material to find out just how to handle the home orchard on a practical basis.

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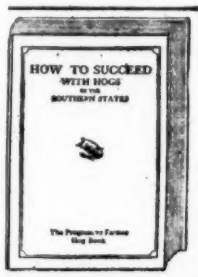

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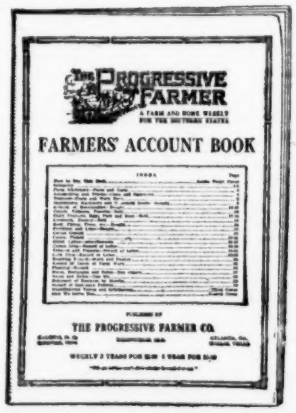

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Irish Potatoes: United States Government Grades

GROWERS who expect to obtain the best prices for their Irish potatoes this year will have to market them by the United States government grades. Mixed lots will sell at the price of the lowest grade found in the sack. The grade requirements are published below:

United States Grade No. 1

This grade shall consist of sound potatoes of similar varietal characteristics, which are practically free from dirt or other foreign matter, frost injury, sunburn, second growth, cuts, scab, blight, dry rot, and damage caused by disease, insects, or mechanical means. The minimum diameter of potatoes of the round varieties shall be one and seven-eighths (1⅞) inches, and of potatoes of the long varieties one and three-fourths (1¾) inches. In order to allow for variations incident to commercial grading and handling, 5 per centum by weight of any lot may be under the prescribed size, and, in addition, 3 per centum by weight of any such lot may be below the remaining requirements of this grade.

United States Grade No. 2

This grade shall consist of potatoes of similar varietal characteristics, which are practically free from frost injury and decay, and which are free from serious damage caused by dirt or other foreign matter, sunburn, second growth, cuts, scab, blight, dry rot, or other disease, insects, or mechanical means. The minimum diameter shall be one and one-half (1½) inches. In order to allow for variations incident to commercial grading and handling, 5 per centum by weight of any lot may be under the prescribed size, and, in addition, 5 per centum by weight of any such lot may be below the remaining requirements of this grade.

Selecting the Females for the Poultry Breeding Flock

ONLY mature birds should be used in the breeding pens. Hens are more desirable than pullets because they produce stronger chicks and because the hens can be more accurately judged for laying ability than can pullets. If the breeders were not picked out last fall they can be successfully chosen this month. The birds which lay best during the winter are the ones which will make the best record for the year, and at mating time the best winter layers can be easily distinguished, says T. S. Townsley of the University of Missouri College of Agriculture.

Health and Vigor.—Strong vigor is indicated by a broad head; prominent, alert eye; short, well curved beak; red comb; broad chest; and a disposition to keep busy. Lack of vigor is shown by a narrow head; long, straight beak; listless or sunken eye; pale comb; narrow chest; and a disposition to loaf. Any bird showing evidence of a cold or roup should not be kept.

Laying Ability.—The hens which have been heavy winter layers will show pale shanks and beak; no yellow in ear-lobes; soft, velvety skin, thin, smooth breast bone; straight, flexible pin bones; abdomen soft and pliable; vent, moist and expanded; width between pin bones at least three fingers. The poor layers will be found to have thick, coarse skin; prominent yellow shanks and beak; yellow in ear-lobes if Leghorns; breast bone thick and coarse; pin bones thick and unyielding; abdomen hard; vent dry and puckered; body depth less than three fingers; and the ends of the pin bones less than two fingers apart.

Dates for Seeding Legumes

Alfalfa (fall)	Sept. to Oct. 15
Alfalfa (spring)	Mch. to Apr. 15
Alsike clover	Aug. to Oct. 15
Bur clover	Aug. to Oct. 15
Canada field peas	Feb. to Mch. 15
Cowpeas	May to July 15
Crimson clover	Sept. to Oct. 15
Lespedeza (Japan clover)	Mar. and Apr.
Melilotus	Mar. to Apr. 15
Peanuts	May to July 1
Red clover	Sept. to Oct. 15
Soy beans	May to July 10
White clover	Sept. and Oct.
Velvet beans	Apr. to June
Vetches	Sept. to Oct. 15

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Exceptionally Fine 3 to 4-months-old Berkshire Boars and Gilts—Royally bred, registered in your name, and satisfaction guaranteed. Reduced price $20 each. Hillcrest Farm, Clarksville, Va.

DUROC-JERSEYS

Durocs — All ages. Indian Creek Duroc Farm, Crouse, N. C.

First check received for $50 gets Registered Duroc Young Sow, bred for February farrowing. First $16 gets Duroc pig, weight 50-60 lbs., registered in buyer's name. Paul T. Menzel, South Mills, N. C.

Durocs Are Profitable—But a pig must be 12 weeks old before you can cash in. You can make ready money now soliciting subscriptions for The Progressive Farmer. Two subscriptions a week for 10 weeks will pay for a good pig. Write us about it today.

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For Sale—Registered Hampshires—Cholera immune. Melvin Mitchell, Old Trap, N. C.

Hampshires — Bred Gilts, Sows, Pigs — Champion blood. Mayer, Route 7, Charlotte, N. C.

Purebred Hampshires — Boars, 8 months; pigs, 8 weeks. D. B. Humphrey, Lumberton, N. C.

Hampshires Work for You—But you must work for them first. They pay you for this work after they grow up. The Progressive Farmer pays you as you work. Do you want a job? Write us today.

POLAND-CHINAS

Order Quick and Get Best Poland-Chinas at Reduced Prices—Circular free. Sunnyside, Jonesville, Va.

If You Want the Best Big Type Poland-Chinas at a low price, write your wants to the White Oak Farm, Java, Va.

Prolific Big Type Poland-Chinas—Bred sows, bred and open gilts, service boars and pigs. Priced to sell. Hickory Grove Farm, Conover, N. C.

Registered Big Type Poland-Chinas—Pigs, weight close to 150 lbs., out of 600-lb. sow, price $30 each, either sex; also big sows, bred $100. Satisfaction guaranteed. Old Dominion Stock Farm, Jonesville, Va.

There's Money in Polands—But you won't get it until next spring. You can get your Christmas money dead easy by working for us. We need men, women, boys and girls. Write for our money-making proposition. The Progressive Farmer.

Notice—Bargain Day—The following stock is by our 1,000-lb. Timm's Model, and out of massive Western sows. 10-weeks-old pigs, $17.50; 3-months pigs, only $20; $100 bred gilts, now $60; $100 300-lb. boars, now $80. Registered, immuned, and guaranteed. Order from this advertisement. E. O. Hunter, Winston-Salem, N. C., Route 7.

TAMWORTHS

For Sale at 20 Cents Pound—Several very fine, cholera immune Tamworth boars, weighing 125 lbs. and upwards. Registration extra. Henderson Forest Farm, Blanch, N. C.

ABERDEEN-ANGUS

For Sale—Registered Angus Cattle—All ages. Allen Bros., Chattanooga, Tenn.

Registered Aberdeen-Angus Bulls—3 to 14 months, closely related to International winner, at pre-war prices. C. B. Feaans, Lewisburg, Va., Route 3.

HEREFORDS

One Registered Hereford Bull—5 years old, good size, priced reasonable. Conrad F. Motsinger, Route 5, Winston-Salem, N. C.

HOLSTEINS

Big Bargains in Holsteins—See Broad Acre Farm advertisement on Livestock Page.

For Sale—One Holstein Bull—2 years old, a fine one, half black and half white; for quick sale; good and gentle. F. K. Stallworth, Woodruff, S. C.

JERSEYS

For Sale—Richly Bred, Registered Jersey Bull Calf —2 months old, $100. B. R. Tillman, Trenton, S. C.

Jersey Bull—Bought of North Carolina Agricultural College. Will sell at your price. Write J. F. Pollard, Greenville, N. C.

Registered Jerseys—Line-bred Raleighs—Service bulls of individuality. Also fresh cows and heifers. Hickory Grove Farm, Conover, N. C.

TWO OR MORE BREEDS

For Sale—Nice thrifty pigs, for porkers next year, 25-pounders, at $7. McLeod Rainey, Rowland, N. C.

235 Grade Pigs and Shoats—From large stock and good blood. Priced low. Chas. Crafton, Staunton, Virginia.

Hereford Cattle, Hampshire Sheep, Mulefoot and Spotted Poland-China Hogs. Chas. Thompson, Westport, Indiana.

For Sale—Combahee Poland-Chinas and Durocs—We can supply you with good breeding stock, either above breeds, reasonable prices. Combahee Co., White Hall, S. C.

MISCELLANEOUS

Beautiful S. C. Rhode Island Reds—Pullets, $2; roosters, $3. High-grade Shropshire sheep, $10 each. Miss Annie Flournoy, Charlie Hope, Va.

PET STOCK

DOGS

Six Guaranteed Hounds—$50 to $100. Chas. Crafton, Staunton, Va.

For Sale—Bird Dog—Price $75. Eugene Albright, Box 82, Mebane, N. C.

One Female White Shepherd Dog—7 months old. Satisfaction guaranteed. Price $8. Walter Reynolds, Madison, N. C.

Wanted—A No. 1 Bird Dog—Setter or Pointer—Well broken, good retriever and priced right. Full description in first letter. Lock Box 122, Durham, N. C.

RABBITS

For Sale—California Fur Rabbits—Write for price. Jas. A. Newton, Fayetteville, N. C.

POULTRY AND EGGS

ANCONAS

A Few Ancona Cockerels—Extra values. Write P. M. Shulenberger, Landis, N. C.

Ancona Cockerels—From same hatch which won first at Richmond State Fair, first at 2 county fairs this fall; $2.50. Miss Christine Miller, Elkton, Va.

CORNISH

Dark Cornish Cockerels for Sale. Ben Stockner, Burkeville, Va.

LEGHORNS

Husselman's Brown Leghorn Cockerels—$2.50. Write Frank Puryear, Orange, Va.

Single Comb White Leghorn Baby Chicks—Strong, vigorous chicks, from our special matings, from stock that has won first prizes in every show exhibited, with an egg record unsurpassed. 50,000-egg capacity latest model incubators. Price $5.50 per 25; $10.50 per 50; $20 per 100. Two hatches every week, beginning February 1st. Now booking orders for February and March. Safe delivery guaranteed. Alabama Leghorn Farms Co., Ensley, Ala.

S. C. Buff Leghorn Cockerels—Wyckoff and Heasley egg machine strain; $2.50; or exchange for White Wyandotte hens. N. C. Poultry Farms, Norlina, N. C.

ORPINGTONS

Purebred Buff Orpington Cockerels—$5 each. Alvas Powell, Warsaw, N. C.

Choice S. C. Buff Orpingtons—Write for prices. J. C. Gordon, Waxhaw, N. C.

Best White Orpingtons in North Carolina—Pullets, $4; cockerels, $6 up. Elmer Oettinger, Wilson, N. C.

Andrews' Egg-laying, Meaty-making, prize-winning White Orpingtons—Eggs, $3; baby chicks, $5 for 12; pullets and cockerels, $3, $4 and $5. W. A. Andrews, Opelika, Ala.

PLYMOUTH ROCKS

Purebred Barred Plymouth Rocks—Eggs, $2.50 per 15, delivered. Mrs. Grover Roper, Laurens, S. C., R. 6.

Prices Reduced—Barred Rocks, White Rocks, Rhode Island Reds and White Leghorns—From the world's greatest laying strains. Pullets, $1; cockerels, $4 and $5. Circular free. Keowee Farm, Calhoun, S. C.

47 "Bars and Stripes" under ribbons, great "Official North Carolina Show". Quality spoke. Write for winnings. Grand breeding birds for sale. Foundation stock from Madison Square Garden winners. Newringrock Farm, Salisbury, N. C.

RHODE ISLAND REDS

Write for New Price List of Rose and Single Comb Red cockerels and pullets. Sallie Davidson, Statesville, N. C.

High-class Single Comb Reds—Winners, best shows in North Carolina; heavy layers year-round. Eggs, $3.15, delivered. Beautiful, grown, dark even brilliant red cockerels, $5, $7.50, $10 each. Miss Sadie Covington, Wadesboro, N. C.

WYANDOTTES

Fishel White Wyandottes for Sale. Sandy Creek Farm, Durham, N. C.

Columbian Wyandottes—First prize winners, Official State Poultry Show, Salisbury, N. C. Cockerels, bred from prize winning strain, $5 to $10; pullets, $3 to $5. Hatching eggs in season. L. E. Workman, Denton, N. C.

GEESE

Full Blood Wild Geese—Domesticated. A Christmas present that will be appreciated. J. F. Pollard, Greenville, N. C.

TURKEYS

Purebred Mammoth Bronze Turkeys for Sale—Hens, $8; toms, $10. Mrs. C. A. Baker, Goodlows, Va.

Purebred Bourbon Red Turkeys for Sale—Hens, $6; toms, $9. Mrs. D. S. Craven, Rennsur, N. C., Route 1.

Largest Strains—Bronze Turkeys—White Wyandotte hens, cockerels, and eggs. Best laying strains. Sunnyside, Jonesville, Va.

Largest Strains Bronze Turkeys—White Wyandotte hens, cockerels and eggs. Best laying strain. Sunnyside, Jonesville, Va.

Mammoth Bronze Turkeys—Prize winners; free from disease and satisfaction guaranteed. Hickory Grove Farm, Conover, N. C.

McKee's Bronze Turkeys—Will improve your flock; heavy bone; prize winners. Prices on request. McKee's Orpington Farm, Watertown, Tenn.

Fine Big Bone, Purebred Mammoth Bronze Turkeys—From best strains in South and West. For description and prices, write J. A. Davis, Kinards, S. C.

Young Mammoth Bronze Turkeys for Sale—1920 hatch. Toms, weighing 24 to 30 lbs., $20 each; hens, 14 to 18 lbs., $14 and $15 each. All from first prize winning stock and extra prize of $18 lamp. Oliver J. Conrad, Winston-Salem, N. C., Route 2.

50-lb. Strain Mammoth White Turkeys — 30-lb. Strain Bourbon Reds. Valley View Farm, Hamilton, Alabama.

TWO OR MORE BREEDS

Purebred Cornish Game and Columbian Wyandotte Eggs for sale, $2.50. 15th February and March delivery. H. W. Thurmond, Greshamville, Ga.

Some Fine S. C. Buff Orpington chickens and Bourbon Red turkeys for sale. Orders promptly filled. Miss Julia Jones, Tobaccoville, N. C.

SEEDS AND PLANTS

BEANS

Nice Lot (New Crop) Mammoth Yellow Seed Soy Beans—For prices, write M. F. Owens & Company, Elizabeth City, N. C.

Millions Frost-proof Cabbage Plants—500 postpaid, $1; by express, $1.50 per 1,000. Plant Farm, Utah, North Carolina.

Soy Beans—Mammoth Yellow soy beans at $2.25 per bushel, f.o.b. Knoxville. D. R. Mayo, Seedsman, Knoxville, Tenn.

First-class Early Speckled Velvet Beans—1920 crop, $1.25 per bushel; Bunch velvet beans, $2 per bushel. All f.o.b. Warthen, W. H. Franks, Warthen, Ga.

Tinoa and Otootan Soy Beans—Produce heaviest yields any forage crop known. Gallon enough for an acre; $2.50 postpaid. Free literature. Kimbrough-Mitchell Seed Company, Meridian, Miss.

Soy Beans—Mammoth Yellow Soy Beans, $1.90 per bu. This variety has proven the most suitable for conditions in the South and should be planted on every farm. Are you going to reduce your cotton acreage in 1921, or continue to let Wall Street and Liverpool dictate our prices? This cotton problem must be a fight to a finish, which will end with victory for the cotton producer. Kirby Seed Company, Gaffney, S. C.

CABBAGE AND COLLARDS

Early Jersey Cabbage Plants—$1.75, 1,000. R. I. Love, Newton, N. C.

Ready Now— Best Cabbage Plants — $1.75, 1,000. Cabbage Farm, Claremont, N. C.

Fine Stocky Cabbage Plants Ready—$1.75, 1,000, mailed. G. W. Murray, Claremont, N. C.

Finest Jersey Wakefield Plants—$1.25 per 1,000; over 5,000, $1 per 1,000. G. A. DeKay, Georgetown, South Carolina.

Frost-proof Cabbage Plants — All varieties, now ready. $1.75 per 1,000 net; special price large contracts. Willis Plant Co., Ty Ty, Ga.

Frost-proof Cabbage Plants — All varieties, now ready, at $1.75 per 1,000, f.o.b. Ty Ty; special prices on large contracts. Parks Plant Co., Ty Ty, Ga.

Frost-proof Early Jersey Cabbage Plants—Grown in famous Piedmont Section, from selected seed; will head. 1,000, $1.75, mailed. Murray's Farm, Claremont, N. C.

500 Frost-proof Cabbage Plants—Postpaid, $1; 250 postpaid, 50c; 1,000 expressed, $1.50; 10,000, $14. Guarantee prompt shipment and satisfactory plants. R. O. Parks, Darlen, Ga.

Free—100 Fine Frost-proof Cabbage Plants With Every Order—Leading Varieties. 200 postpaid, 60c; 400 postpaid, $1; 1,500 expressed, $2.25. Quick shipments. Dixie Farms, Darlen, Ga.

Cabbage Plants—Large and stocky, ready now; the kind that makes hard heads. 100, 50c; 300, $1; 500, $1.50, postpaid; by express collect, 1,000, $2; 5,000, $7.50. H. & R. Ballard, Pavo, Ga.

For Early Spring Cabbage—500,000 Early Jersey and Charleston Wakefield cabbage plants, grown from the best Long Island seed. 1,000, $1.75; 500, $1; 100, 30c, postpaid. East Va. Plant Farm, Franklin, Va.

It's Time to Buy Cabbage Plants—One subscription to The Progressive Farmer will give you enough to buy enough for your garden. We want you to work for us. If you are looking for a good job, write us today.

Do Not Fool With Trashy Cabbage Plants—Order frost-proof plants from grower. Leading varieties; 10 per cent overcount. 250 postpaid, 50c; 500 postpaid, $1; 1,000 expressed, $1.50. Plant Farm, Darlen, Georgia.

(Classified ads. continued on next page)

Classified Advertising Rates

THE PROGRESSIVE FARMER Is Now Issued in Four Editions as Follows:

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Covers North Carolina, South Carolina and Virginia, and has 70,000 circulation, the classified rate being—

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These rates carry no discount and are cash with order. We keep no books on classified advertising, as there is no margin of profit in this class of business for bookkeeping and billing expenses.

We hope that every classified advertiser of *The Progressive Farmer*, whether now advertising or intending to, will take notice of this rate, and the states that the different editions cover.

THE PROGRESSIVE FARMER

FARMERS' EXCHANGE

CABBAGE AND COLLARDS

Millions Fine Large Frost-proof Cabbage Plants—Ready now; leading varieties. Can fill 400 orders daily. 250 postpaid, 50c; 500 postpaid, $1; 700 expressed, $1; 5,000, $7. Walter Parks, Darien, Ga.

For Sale—Five Million Frost-proof Cabbage Plants—330, 70c; 550, $1; 1,100, $1.75, postpaid; by express, 1,100, $1.50; 5,500, $5.50; 11,000, $12.50. All orders filled within 2 days. Satisfaction guaranteed. Write R. A. Strain, Darien, Ga.

For Sale—All standard varieties frost-proof Cabbage Plants, for immediate shipment, $1.50 per 1,000; for 5,000 and over, $1.25 per 1,000. We guarantee satisfaction. Order from the Old Reliable. The Enterprise Truck Farm, Georgetown, S. C.

Plants, Not Promises—Extra large, selected "Frost-proof" Wakefields and Succession; 250 postpaid, 50c; 600 postpaid, $1.25; 1,000 expressed, $1.40; 6,000, $7.50. Guarantee satisfactory plants. Quick shipment. Write Seaside Farms, Darien, Ga.

Cabbage Plants—Protected from frost by overhead irrigation. Charleston Wakefield, Early Summer, Lupton's Best Long Island seed. $1.75 per 1,000; special price in large quantities. Parcel post orders, 25 cents per 1,000 extra. J. R. Davis Farms, Bartow, Fla.

For Sale — Millions Frost-proof Cabbage Plants—All leading varieties, grown from Long Island seed. If plants are not shipped in 7 days, money refunded. 1,000, $2.50; 500, $1.50; 300, $1. Harper Plant Co., Thomasville, Ga.; Hattiesburg, Miss. Write nearest office.

Frost-proof Cabbage Plants—Wakefields, Flat Dutch and Succession. Prepaid parcel post, 100, 50c; 300, 75c; 500, $1; 1,000, $1.75. Full count and delivery guaranteed. By express, f.o.b. here, 1,000, $1.60; 5,000 at $1.50; 10,000 up at $1.25. D. F. Jamison, Summerville, S. C.

Fifty Acres Frost-proof Cabbage Plants — Jersey Wakefield, Charleston Wakefield and Succession. Our plants are guaranteed to give satisfaction. $2.50 per 1,000, or $1.35 for 500, parcel post, prepaid; $2 per 1,000 by express collect; 5,000 lots, $1.75. Our service is prompt, no delay. Can furnish from 1,000 to 10,000,000. Mansor Plant Co., Valdosta, Ga.

Cabbage Plants—Stocky, frost-proof, and as good as can be bought anywhere at any price. We have early Jersey Wakefields, Charleston Wakefields, Succession and Flat Dutch. Prices: by express, 500, $1.25; 1,000 to 4,000 at $2 per 1,000; 5,000 to 9,000 at $1.75 per 1,000; 10,000 and up at $1.50 per 1,000. By prepaid parcel post, 100, 50c; 200, 80c; 300, $1; 400, $1.30; 500, $1.50; 1,000, $2.50. Oakdale Farm, Birmingham, Alabama.

Cabbage Plants — Fulwood's frost-proof cabbage plants, ready for immediate shipment. Varieties: Jersey and Charleston Wakefield, Succession and Flat Dutch. Prices: by express, 1,000 to 4,000, at $2 per 1,000; 5,000 to 9,000, at $1.75 per 1,000; 10,000 and over, at $1.50 per 1,000; by parcel post, 100 for 50c; 500 for $1.50; 1,000 for $2.75, postpaid. Plants grown from best Long Island seed. Satisfaction guaranteed or order refilled. P. D. Fulwood, Tifton, Ga.

CANE AND SORGHUM SEED

Cane Seed—Early Orange, $1.50 per bu.; Early Amber, $1.45 per bu.; Sugar Drip, for syrup, $2 per bu. These prices are below pre-war prices and below cost of production and we advise purchasing now. Surely your cotton acreage reduction in 1921 will be at least 50 per cent. Kirby Seed Co., Gaffney, S. C.

CLOVER

Melilotus or Sweet Clover Seed; White Blooming Sweet Clover seed, hand cleaned, $15; recleaned, $20; cash with order. No less than 100 lbs. sold. Book of instructions goes with each shipment. Farm Implement & Seed Co., Brookville, Miss.

Clover—Choice Stock Lespedeza or Japan Clover—$4 per bu. Plant in your grain February or March. This clover is a good soil improver, and will furnish a good grazing crop for summer after your grain has been harvested. It also reseeds itself each year. Kirby Seed Co., Gaffney, S. C.

CORN

Reid's White Corn—Bred scientifically for 20 years. Booklet free. Watch our ads. S. E. Reid & Sons, Henderson, Tenn.

COTTON

Blue Ribbon Big Boll, Early 5-lock Cotton—Prize winner. W. H. Kirkwood, Bennettsville, S. C.

Acala Cotton Seed—Best variety known. For description and prices, write Bitsche Seed House, Chickashaw, Okla.

Improved Extra Early Cleveland Big Boll Cotton Seed—Ginned with private gin, $3 per bushel. H. M. Rogers, Dillon, S. C.

You Need Your Cotton Seed Before Planting Time—Let us buy them for you. We've got a job open for you, if you will only write us today. The Progressive Farmer.

Cotton Seed—Pool's Early Big Boll—Get them direct from introducer's farm. Write for booklet and prices. Elliot S. Pool, Clayton, N. C.

Cotton—Wannamaker's Improved Cleveland Big Boll and Early King Cotton Seed—Free from boll weevil; $1.50 per bushel. L. S. Olive, Apex, N. C.

For Sale—Wannamaker's Cleveland Big Boll Cotton Seed—One year from Wannamakr. No boll weevil. Private gin. $2 per bushel. Write Dixie Hill Farm, Box 604, Spartanburg, S. C.

Cotton Seed—Addison's Early Prolific—Makes good in the boll weevil section; 45 per cent lint, good staple, medium boll, light foliage, and extra early. W. P. Addison, Blackwells, Ga.

OATS

Seed Oats—Fulghum, $1.20 per bu.; Burt or Ninety-Day, 90c per bu. These are the two leading varieties for spring planting. Order your seed now and have them ready to plant in February or first of March. Kirby Seed Company, Gaffney, S. C.

PEAS

Peas—All kinds new ready for shipment. Write for prices. H. L. Powe, Cheraw, S. C.

Wanted—Field Peas—Submit sample and price if reasonable. N. A. Kimrey, Mebane, N. C.

Wanted—Table and Cowpeas — Mail samples; state price, quantity. Jeffreys & Sons, Goldsboro, N. C.

Good, Clean, Mixed Peas—$2.25 per bushel, cash with order. Farmers' Hardware Co., Forest City, N. C.

New Crop Mixed Peas—$3.50 bushel. Sun-dried apples, 8c lb.; 50-lb. bags. All f.o.b. Luther Cobb, Culberson, N. C.

Peas—Mixed, $1.90 per bushel; Whippoorwill, $2.15 per bushel; Large Black, $2.35 per bushel; White, $2.50 per bushel; Iron, $2.50 per bushel; Clay, $2.50 per bushel; Brabham, $2.50 per bushel; Red Ripper, $2.25 per bushel. These price cuts are below the 10-year average. If you are going to need peas, this is a good purchase. You can afford to improve your soil at these prices. Do you think it advisable to grow another large cotton crop in 1921? Kirby Seed Co., Gaffney, S. C.

PECANS

75,000 Early Bearing, Bred-up, Budded and Grafted Papershell Pecan Trees—Write for free booklet on Pecan Culture now. Bass Pecan Co., Lumberton, Miss.

STRAWBERRIES

Strawberry Plants—By prepaid mail: Everbearing, 100, $2.50; 200, $4.50; 300, $6; 400, $7.50; 500, $9; 1,000, $16. One-crop varieties, such as Lady Thompson, Klondike, Missionary, etc., 100, $1.50; 200, $2.50; 300, $3.25; 400, $4; 500, $4.50; 1,000, $7.75. Oakdale Farm, Birmingham, Ala.

WATERMELONS.

Watson Melon—Producing 3 per hill, approximating 34, 38, 40 lbs.; 1½ cars acre. Seed, $1.25 lb. Reference: Allendale Bank. Write L. A. Stoney, Allendale, S. C.

MISCELLANEOUS SEEDS AND PLANTS

Sudan, $7 cwt.; Alfalfa, $10; Timothy, $3.50. Other seeds at 50 per cent less than wholesale. Reliable Seed Co., Salina, Kansas.

Peach and Apple Trees at bargain prices to planters in small or large lots by express, parcel post or freight. 500,000 June budded peach trees. Plum, cherries, pears, grapes, all kinds berries, nuts, etc. Shade and ornamental trees, vines and shrubs. Free catalog. Tennessee Nursery Co., Cleveland, Tenn.

FRUIT TREES

Sell Fruit Trees, Nut Trees, Ornamental Trees—Light work, good profit. Write today. Smith Bros., Dept. 25, Concord, Ga.

Fruit Trees—All Varieties Peaches, Apples, Pears, Plums, Cherries, Figs, Grapes, Pecans, and Berry Plants—For $10.50 we will send by express 17 peach trees, which will give ripe fruit from June to October; other peach trees, 75c each; apple trees, $1.25; pecans, $1.75; grapes, 75c. Write for prices on any other fruit trees, shade trees, shrubbery or berry plants needed. Our stock is as good as can be had anywhere at any price. Oakdale Farm, Birmingham, Ala.

FARMS FOR SALE OR RENT

VIRGINIA

Fertile Bluegrass Dairy Farms—(Catalog.) Perrow, Remington, Va.

Virginia—Let us send you free catalog of the best bargains in farm and timber properties in Virginia, where farm land is cheap and productive, and the climate delightful. Address, The Virginia Realty Co., Palmyra, Va.

For Rent—Farm Near Norfolk—100 Acres—In fine condition; fenced and ditched; large barn, and 8-room dwelling, running water in both; teams, tractor, wagons and implements; on Norfolk Southern Railroad; near electric line; suitable for vegetables, staple crops, dairy and stock raising; on shares or for cash rent. Tenant should control sufficient help and money to finance himself. Box 282, Norfolk, Va.

OTHER STATES

40-Acre Florida Farm—Fruited oranges, grapefruit; on good highway, convenient railroad town; well cultivated tillage; pasture, woodland; 100 heavy bearing orange trees; 134 grapefruit trees; tangerines, mulberries, guavas, lemons, grapes, etc.; attractive house, good barn, tenant house, etc.; only $3,000, easy terms. Details page 45 Strout's Illustrated Catalog 1,200 Bargains; postpaid free. Strout Farm Agency, 1210 G E Graham Bldg., Jacksonville, Fla.

The Santa Fe has built a new branch railway line through the South Plains region of West Texas. A new farming and livestock region with new towns is being opened up. This territory already is partly occupied by a good class of settlers, and crop possibilities proven by actual experience. Here you can profitably raise cotton, corn, sorghums and fruit. It is an ideal livestock and dairy country. Low prices for untilled lands and very easy terms. Move in early and take first pick. Write today for free illustrated folder. T. C. Spearman, 30 Santa Fe Bldg., Blythe, Texas.

SCHOOLS AND COLLEGES

Learn at Home or School—Bookkeeping, Shorthand, on credit. Positions guaranteed. Edwards College, Winston, N. C.

Young Man—Learn the Barber Trade—And be independent. The best college in the South. Write Charlotte Barber College, 40 E. Trade St., Charlotte, N. C.

HELP OR POSITION WANTED

Man 34 years old, married practical farmer, wishes position superintendent. Managed 150-horse farm for 10 years. A-1 references. Address 309 College Apart., Charlotte, N. C.

SALESMEN

Agents—Mason Sold 18 Sprayers and Auto Washers One Saturday—Profit, $54. Square deal; steady work. Write Busler Company, Johnstown, Ohio.

Agents—Make a Dollar an Hour—Sell Mendets, a patent patch for instantly mending leaks in all utensils. Sample package free. Collette Mfg. Co., Dept. 701, Amsterdam, N. Y.

MACHINERY

For Sale Cheap—Slightly used De Laval Cream Separator—Good as new. Hagan's Dairy Supply House, Greensboro, N. C.

For Sale—One Standard Incubator (Buckeye)—275-egg size, good as new. One brooder, 150-chick size; one 100-chick size. At a bargain. Tom Saunders, Rutherfordton, N. C.

MISCELLANEOUS

For Sale—Plantation Prepared Carolina Rice—$7 per 100 lbs. Flour and chaff from same, $20 per ton. Samples furnished. Write J. St. Clair White, Cordesville, S. C.

Charlotte Russe—Creole Kisses, Cream Puffs, Fruit Nougat, Francotellis—Cake and candy recipes, 10c up. Send 27 cents for list. A. D. Pierson, Box 474, Vicksburg, Miss.

Patent—Send for Free Book—Contains valuable information for inventors. Send sketch of your invention for free opinion of its patentable nature. Prompt service. (20 years' experience.) Talbert & Talbert, 4954 Talbert Bldg., Washington, D. C.

Patents Secured—Prompt service. Avoid dangerous delays. Send for our "Record of Invention" form and Free Book telling How to Obtain a Patent. Send sketch of model of your invention for Preliminary examination and Advice Free. Charges reasonable. Write today. J. L. Jackson & Co., 113 Ouray Bldg., Washington, D. C.

Spray Fruit Trees This Winter—With lime-sulphur to control San Jose Scale. We have it in concentrated form, and by adding 9 gallons water to each gallon lime-sulphur, you have a mixture that will kill scale and make fruit trees healthy. Prices by express: 1-gallon can, $1.25; 5-gallon can, $5. Name express office. Oakdale Farm, Birmingham, Ala.

FEED

Baled Crab Grass and Clover Hay—Shucks and wheat straw for sale. N. A. Kimrey, Mebane, N. C.

FRUIT

Sprayed, Hand-picked, Well Packed Apples—$5 barrel; $1.50 box. Orders filled promptly. Greendale Farm, Beta, N. C.

FRUIT AND SYRUP LABELS

Label Your Fruits and Syrups—Labels create profitable demand for home-canned products. Request free samples. Emerson, Troup, Texas.

PRINTING

250 Envelopes—$1.20; 500, $2.10, postpaid. Womble Press, Bear Creek, N. C.

ROOFING

Galvanized Shingles and 5-V Crimp Roofing. Rubber roofing—smooth and slate-surfaced. High-grade, but priced low. Budd Piper Roofing Company, Durham, N. C.

SYRUP

Pure Sugar Cane Syrup—The best kind, delivered to your nearest railroad station, freight prepaid, in 35-gallon barrels, at 80c; in cases, six 10-lb. cans to case, at $5.25 per case, or 5 cases, $25.50; cash with order. Money back if not satisfactory. Mizell Fertilizer Co., Tallahassee, Fla.

For Sale—Pure Georgia Sugar Cane Syrup—New crop, extra quality, in 35-gallon, new cypress barrels, 65c gallon. J. F. Ratliff & Son, Blackshear, Ga.

TOBACCO

Improved Adcock Tobacco Seed—50c ounce, or $5 per pound. J. W. Ashley, Timberlake, N. C.

Sweet Oronoko Tobacco Seeds—One teaspoonful, 8 cents, postpaid. Ambrose Crotts, Forest City, N. C.

Adcock's Tobacco Seed—Cultivated 15 years without fertilizer. Price 50c per ounce. Pervis Tilley, Bahama, N. C.

PUREBRED LIVESTOCK

BERKSHIRES

Va. Berkshire Association
CONSIGNMENT SALE
Roanoke, Va.
TUESDAY, JAN. 11, 1 P.M.
25 Bred Sows and Gilts,
10 Open Gilts,
6 Service Boars.
For Catalog, address
W. M. JOHNSON, Sec.-Treas.
Manassas, Va.

BERKSHIRES AT 1921 PRICES
Herd headed by a grandson of Epochal (Imported), one of the greatest sires of the breed, and 600-lb. herd dams, granddaughters of Laurel Champion. Open and Bred Sows and Service Boars for sale. Also exceptional 4-months Gilts and Boars. Now is the time to buy foundation animals at our low prices. Write for descriptive list and prices.
HILL CREST FARM, CLARKSVILLE, VA.
H. M. HARRIS, Proprietor.

DUROC-JERSEYS

SOWS— DUROCS —PIGS
WE WANT TO SELL YOU A GOOD DUROC
SOW—One that raises large litters. Will make you money.
PIGS—Can also supply pairs and trios of PIGS, not akin; immune.
Satisfaction Guaranteed.
CAMPBELL-HICKLIN LIVESTOCK CORP'N.,
Sheldon, S. C.

DUROCS— Boars —DUROCS
Pathfinder Preeminent
Reserve Champion North Carolina State Fair, 1920, Heads Our Herd.
A FEW CHOICE SUMMER BOARS left for sale at reasonable prices. We guarantee satisfaction.
FAIRMONT FARMS,
E. S. Vanatta, Owner & Mgr., Hillsboro, N. C.

—DUROC-JERSEYS—
800 Head in Herd on an Exclusive Hog Farm.
BRED and OPEN SOWS and GILTS.
SERVICE BOARS, and PIGS, both sexes.
Best blood lines of the breed. Prices right. Satisfaction guaranteed. Can supply from one to a carload. WRITE US.
BRINKLEY DUROC FARM, Brinkley, Ark.

75— Reg. Duroc Pigs Cheap —75
Closing Out Pigs (Account Short Crop)
Double Col. and Cardinal Orion Strain: 12 weeks of age, $10; 16 weeks of age, $15. Satisfaction guaranteed.
FRANKSDALE STOCK FARM, Talladega, Ala.

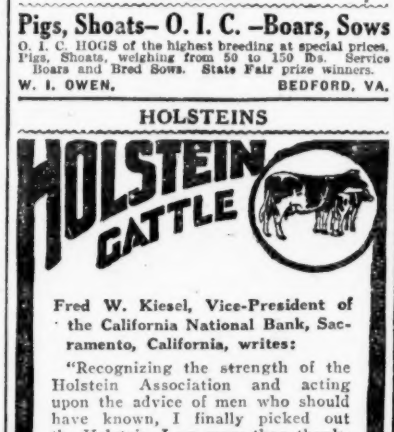
HAMPSHIRES

—HAMPSHIRES—
A FEW BRED SOWS AND GILTS
These are of the very best breeding and are choice individuals.
YOUNG BOARS—Ready for service.
Also PIGS—All immune.
WRITE US YOUR WANTS
CAMPBELL-HICKLIN LIVESTOCK CORP'N.,
Sheldon, S. C.

O. I. C.'s

Pigs, Shoats– O. I. C. –Boars, Sows
O. I. C. HOGS of the highest breeding at special prices. Pigs, Shoats, weighing from 50 to 150 lbs. Service Boars and Bred Sows. State Fair prize winners.
W. I. OWEN, BEDFORD, VA.

HOLSTEINS



Fred W. Kiesel, Vice-President of the California National Bank, Sacramento, California, writes:

"Recognizing the strength of the Holstein Association and acting upon the advice of men who should have known, I finally picked out the Holstein. I am more than thankful that I had sense enough to make the decision along practical lines."

Send for Free Booklets

The Holstein-Friesian Association of America
180 American Bldg., Brattleboro, Vermont

When writing to an advertiser, say: "I am writing you as an advertiser in The Progressive Farmer, which guarantees the reliability of all advertising it carries."

HOLSTEINS

Foundation Holsteins

NEW YORK, recognized as the cradle of the Holstein industry, has furnished the foundation animals for many herds whose fame is known throughout the Holstein world. She has diversified popular blood lines, that are noted for short and long time production. Type that wins in the show ring.

Recognizing the importance of the public sale as an advertising medium, the New York Holstein-Friesian Association has selected, through a nationally known judge, a consignment of the state's best Holsteins from over 60 herds for their

FIRST STATE SALE
ROCHESTER, N. Y.
January 12th-13th, 1921

In this sale will be no less than *Ten 30-lb Cows* and more than a *Quarter of a Hundred from 30-lb. Dams;* several from long-distance dams; three Cows above 35 lbs.; two over 700 lbs. milk; and a very select bunch of Young Service Bulls, all from 30-lb. dams. It is doubtful if any sale ever before has contained so many high record show ring individuals.

Follow the men who have made a success of the Holstein business and buy *New York Holsteins.* The men selling in this sale have subjected the animals going into it to the intradermal and subcutaneous tests and will guarantee them without reserve for 60 days to any purchaser. This work has been done with the coöperation of the State and Federal Departments.

Send to E. R. Zimmer, Wieting Block, for a Catalog, and plan to attend this event.

New York Holstein Association,
Syracuse, New York

HOLSTEINS — HOLSTEINS
500 ACRES OF KENTUCKY HOLSTEINS 500
We have been forced by demand to enlarge our farm and office force. We are now in position to give immediate service.
20 YOUNG COWS—Due to freshen by first of year. Price $200 and up.
A NICE SUPPLY OF YOUNG HEIFERS—From $100 to $150.
A BULLY GOOD BUNCH OF BULLS—Ready for service, at $75 to $150.
All stock registered and papers furnished at sale.
CAPTAIN POSCH HOMESTEAD No. 253461, the highest yearly record bull of the South, heads our herd; he also was winner in the show ring at our State Fair, in a very strong ring of Wisconsin bulls.
WRITE US YOUR WANTS—And we will give satisfaction.
KENTUCKY HOLSTEIN FARM,
BARDSTOWN, KENTUCKY.

REGISTERED HOLSTEINS
For Sale at All Times.
60 ALL AGES OF BOTH SEXES.
50 HIGH-GRADE FEMALES—
25 two to five years old.
16 YEARLINGS, SOME CALVES.
BROAD ACRE FARM, Inc.,
BLACKSTONE, VIRGINIA.

HOLLINS HERD — Accredited
HOLSTEIN-FRIESIAN
BULL CALVES
WITH SIZE, TYPE, PRODUCTION
Herd Sires: Sons of KING LYONS, KING JOH.
Dams: 1 to 4 Generations of YEARLY RECORDS.
Write for Our List.
JOS. A. TURNER, Manager,
Dept. F. Hollins College, Hollins, Va.

— LOCAL AGENTS WANTED —
We need someone to take subscriptions for us in your neighborhood. We pay well for this work. Write for particulars.

WHERE TO BUY PUREBRED LIVESTOCK

Effective January 1, 1921

Livestock Advertising Rates of The Progressive Farmer

Birmingham Atlanta Memphis Raleigh Dallas

EFFECTIVE JANUARY 1st, 1921

Space	Carolinas-Virginia Edition, Covering Va., N. C. and S. C.	Georgia-Ala. Edition, Covering Ala., Ga. and Fla.	Miss. Valley Edition, Covering Miss., La., Ark. and Tenn.	Texas Edition Covering Texas and Oklahoma.
14 Lines or 1 inch	$ 3.75	$ 2.75	$ 2.75	$ 1.75
1 Page	202.50	148.50	148.50	94.50
½ Page	101.25	74.25	74.25	47.25
¼ Page	50.75	37.13	37.13	23.68
Classified, per word	.07	.05	.05	.04

Rates for all editions: Per inch, $11; per page, $594; half page, $297; quarter page, $148.50. Classified, 20 cents per word.

These rates are for one insertion and are flat, covering as much space as may be used. We make no discounts for time or space. Our paper is divided into four editions, and a different rate applied to each edition. You may use one or all four just as you choose. When sending your order be sure to designate the editions you wish to use.

Paper is dated on Saturday of each week. Advertising forms close 12 days before date of publication

All advertisers are guaranteed, and no questionable advertising of any kind accepted.

Address the Office Nearest You

Cash Must Accompany All Orders for Classified Advertising

Jordan Brothers Grand Champion Duroc Sale January 12, 1921

On above date we offer discriminating Duroc buyers some of the most valuable Sows and Gilts to be sold this winter. Every animal will be an attraction and will make a profitable addition to any herd.

The offering consists of Forty Head of Young Tried Sows and Spring and Fall Yearlings

Sired by such noted boars as *Orion Cherry King* **Jr.**, *Orion Cherry Friend 3rd, Sensational Defender, Imperator's Professor, Pal's Wonder 3rd,* and *Pecan Taxpayer.*

Including Our Great 1920 Show Herd

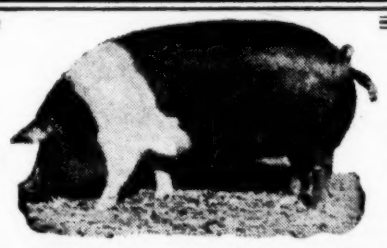
As a Special Attraction, we sell two great Tried Sows, by the immortal *Orion Cherry King Jr.*, out of *Monarch* dams. These sows are full sisters to *Orion Cherry King 8th,* the 1920 National Grand Champion of the South, and to *Quality Orion King* **Jr.**, the famous 1919 International Champion. Champion.

The majority of the offering will be bred to *JORDAN'S WONDER,* 1920 Grand Champion of North Carolina, one of the best big type boars in America. Others will be bred to *Pecan Taxpayer,* a Champion and Sire of Crampions; and *Walt's Top Friend 2nd.* This boar is bred almost exactly like the 1920 World's Junior Champions. Litters by these boars out of sows going in the sale, will represent the last word in modern Duroc pedigree, and will write history for the breed.

Write Us Today for a Catalog, and Plan to Be Our Guest Sale Day.

Jordan Bros., McCullers, N. C.

HAMP-SHIRES



HAMP-SHIRES

50 Daughters and Grand-daughters of Cotter's Choice

18 DAUGHTERS—Just now one year old; good, big and stretchy. Will sell choice of lot for $100, or the whole lot for $75 each.

32 GRANDDAUGHTERS—Of last spring farrow; all good in every way. Will sell Choice Pigs of this lot for $50; in lots of ten, $30 each; the whole lot for $25 each.

6 GOOD, TRIED TYPY SOWS—Bred to **Cherrydale** and **Choice Lad,** sons of **Cotter's Choice,** for spring farrow, are priced at from $150 to $300.

We Guarantee our Hogs to Be Right in Every Way

BROWN-MEADOW HAMPSHIRE FARM,

George Brown, Proprietor, Rochelle, Georgia.

BIG BRED SOW SALE

SELLS AT AUCTION

Saturday, January 29th, 1921

40 HEAD— REAL BIG TYPE DUROC SOWS —40 HEAD

Immune. Mated to ORION DIXIE PAL, a show boar and great sire, State Champion boar, 1919; QUEEN'S GREAT ORION, sired by GREAT ORION, the World's Champion boar, 1919, dam by GREAT SENSATION.

This Offering consists of Tried Sows, Spring Yearlings, and Fall Yearlings. Our show herd of Junior Yearlings and Fall Yearlings will go in this sale, the best lot of big, high-back Sows ever offered for sale in Virginia.

We will sell two Fall Yearling Boars and two last Spring Boars. Here's your chance to get a Real Herd Boar.

Sale Held in Our New Heated Sale Pavilion

CHESTNUT HILL FARM, LYNCHBURG, VA.

Write for Catalog.

Geo. Perrow, Mgr. Swine Dept. **A. P. Craddock,** Owner.

OAKDALE FARM

Big Type POLAND-CHINAS

Winter Sale, Jan. 31st, at New Albany, Miss.

40 Bred Sows, selected from the South's greatest show herd.

Size — Quality — Prolificacy.

Col. Cottingham, Auctioneer. L. T. Wells, Progressive Farmer.

NEWTON & ANDERSON, NEW ALBANY, MISS.

HEREFORDS

LAKE LATHAM FARM, MEBANE, N. C.

JANUARY 10th, 1920

75 HEAD——— ENTIRE HERD ———75 HEAD

We have sold Lake Latham Farm, and it is necessary to sell our Herd of Cattle. Some of the best blood lines of the breed will be offered. Among the offering will be our Great Bulls, *Prince Woodford* and *Prince Fairfax,* and some of as well bred Cows and Heifers as you can find.

In order to assist breeders who buy, we will accept cotton as security, and advance 12 cents per pound, landed Greensboro, for basis middling, New York differences, we charging 6 per cent interest until cotton is sold; the cotton to be stored in a bonded warehouse in Greensboro. We agree to carry for two years without further margin, unless the owner wishes to sell sooner. If the buyer wishes to give other security than cotton, we are agreeable to selling on time, provided security is satisfactory.

Farm two miles from Mebane. Trains stop at farm.

We also sell DUROC-JERSEY and BERKSHIRE HOGS, and all FARMING IMPLEMENTS on the same day.

Write for Catalog

J. E. LATHAM, GREENSBORO, N. C.

MODERN DUROC FARM Is Offering ORION CHERRY KING SOWS

Bred for second and third litters. March farrow.

ALSO SOME YEARLING GILTS, weighing 300 pounds and better, by a son of PATHFINDER CLIMAX. These are not cheap hogs, but on account of bad health I am going to sell them, regardless of price. PIGS and LIGHTER GILTS in great quantity.

COME AND MAKE YOUR SELECTION—AND DO YOUR PRICING

W. R. KIMBALL, **HARGROVE, N. C.**

MISCELLANEOUS BREEDS

Shorthorns and Polled Durhams

Special Prices on 10 Bred Cows and with calves at foot; Open Heifers and Bulls, 6 to 24 months of age. Federal tested and priced according to cotton.

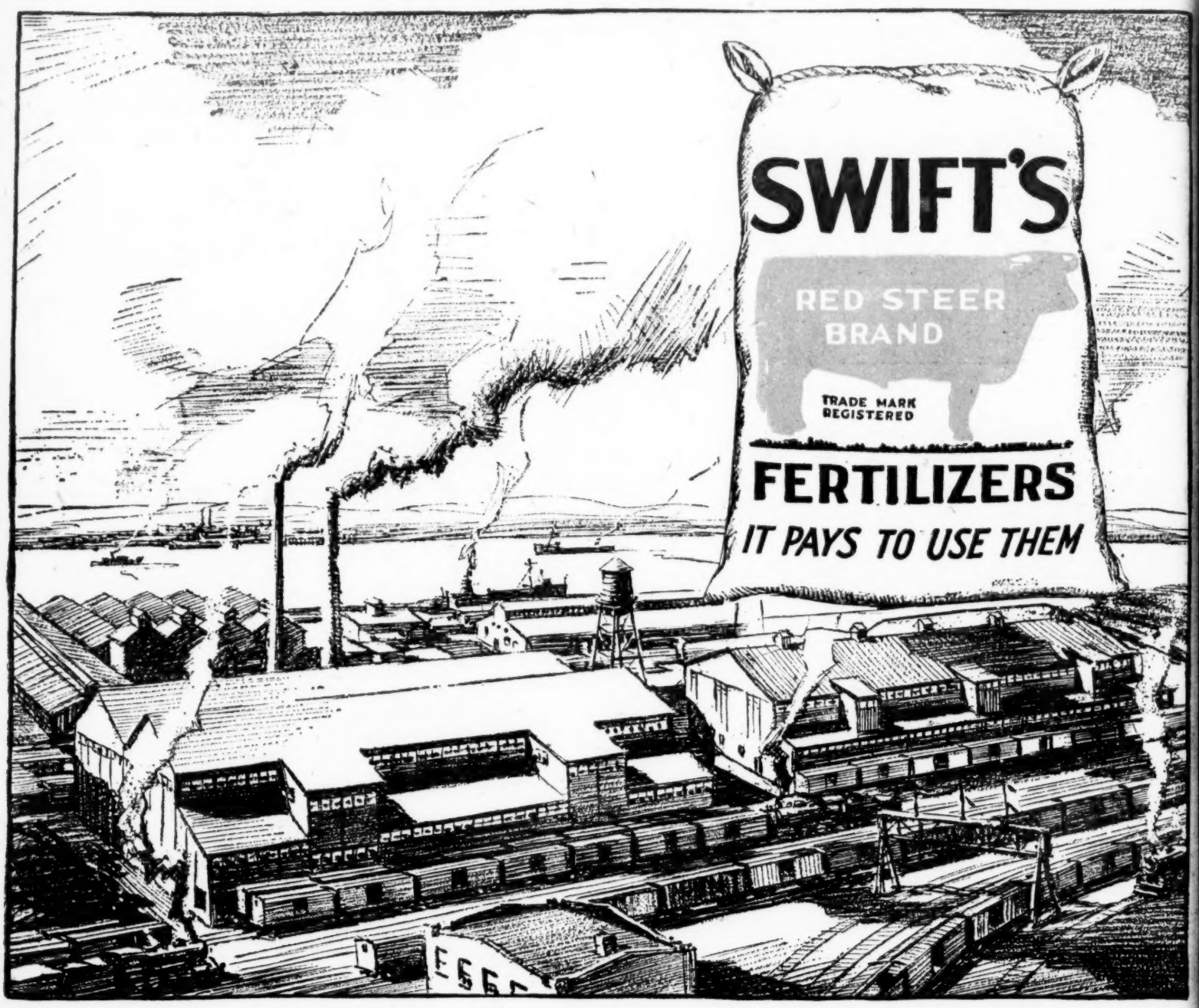
W. R. MOORMAN & SON, **GLEN DEAN, KY.**

LOCAL SUBSCRIPTION AGENTS WANTED!

Write at once.

The Progressive Farmer Company

When writing to advertisers say: "I am writing you as an advertiser in The Progressive Farmer, which guarantees the reliability of all the advertising it carries."



Fertilizers that are made right

SWIFT & Company has everything necessary to make fertilizers right: trained chemists—agricultural experts—manufacturing equipment.

The modern machinery and ample storage in our twenty-four large fertilizer factories enable us to manufacture for you a fertilizer which has all of the ingredients evenly mixed and thoroughly cured.

Through field and laboratory experiments Swift & Company knows the various raw materials, both organic and chemical, to process and combine to make fertilizers best suited for different crops and soils.

Swift's Red Steer Fertilizers furnish available plant food from seeding to complete maturity and because they are evenly mixed, each plant receives its proper proportion of plant food, thus insuring largest yields.

The Red Steer on the bag is a guarantee of highest quality.

For more than fifty years Swift & Company has maintained the reputation of making each Swift product the best of its kind.

You can depend upon Swift's Red Steer Fertilizers. Order now from our local dealer or our nearest Sales Division.

Swift & Company, Dept. 121
(Fertilizer Works)

Atlanta, Ga. Charlotte, N. C. New Orleans, La.

Grow your crops at less cost

Many farmers are making more profit from fifty acres properly fertilized than others are making from twice as many acres without fertilizer.

It costs no more for preparation of land, seed and seeding, ground rental or interest on an acre of land yielding 80 bushels of best corn or a bale of best grade cotton than for one yielding half as much of poor quality.

One sure way of growing crops at less cost is to secure more yield per acre and per man. This you can do by using Swift's Red Steer Fertilizers.

The extra bushels or pounds produced per acre by Swift's Red Steer Fertilizers are the ones that add greatly to your profit. Only the cost of fertilizer can be charged against this extra yield.

"IT PAYS TO USE THEM"